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AMERICAN JOURNAL OF VETERINARY MEDICINE

Vol. XII SEPTEMBER, 1917 No. 9

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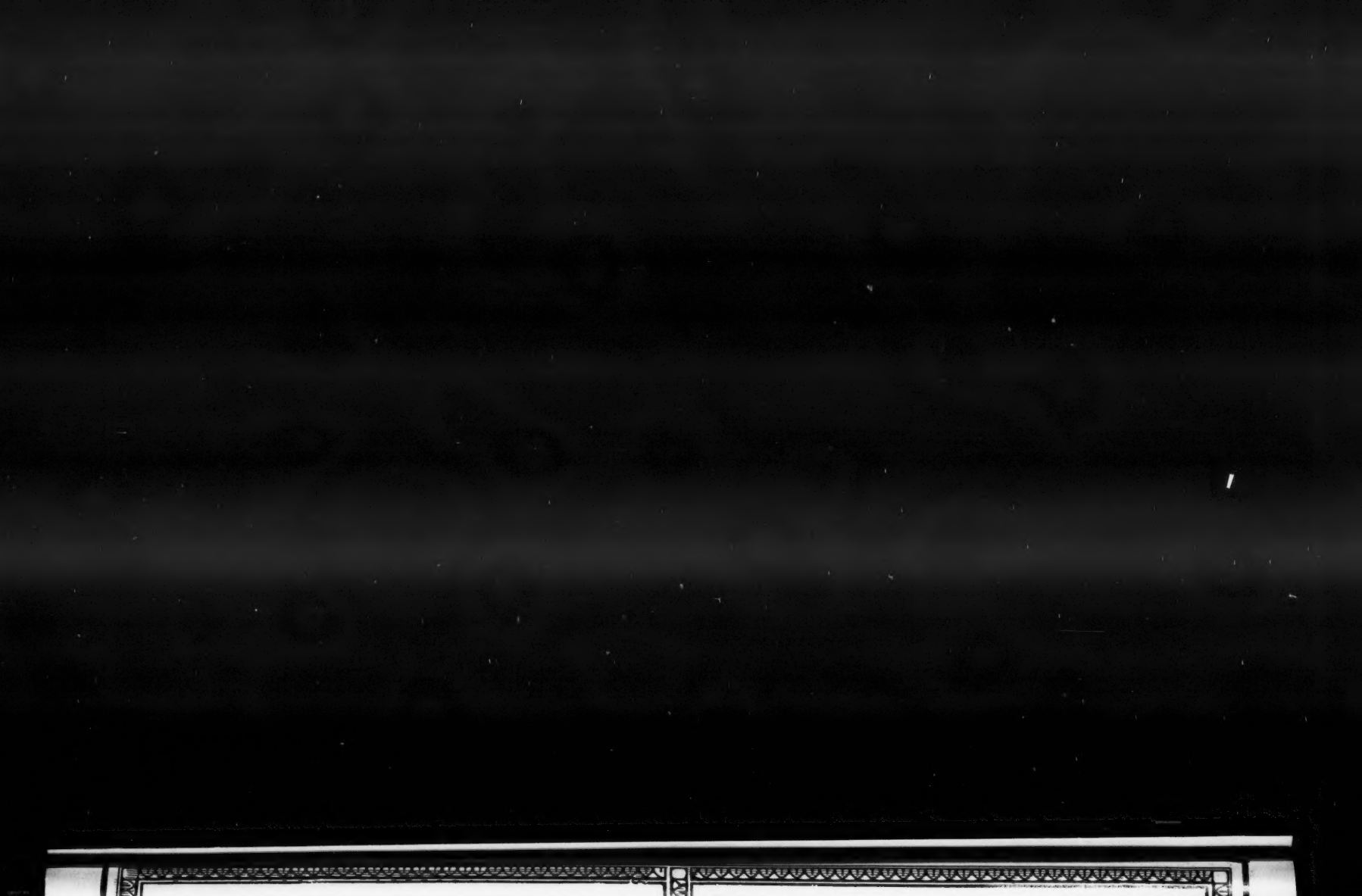

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AMERICAN JOURNAL of VETERINARY MEDICINE

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VOL. XII SEPTEMBER, 1917 No. 9

Fifty-Fourth Annual Meeting of A. V. M. A. Becomes History

THE fifty-fourth annual meeting of the A. V. M. A. convened at the Kansas City Veterinary College, Kansas City, Missouri, August 20th, 1917. It can be most accurately, quickly and easily described by saying it was "the best ever." The weather during the week of the meeting was ideal for Kansas City. The hotel accommodations were as good as may be had in any city, the facilities of the college for holding the meeting were the best that the association has enjoyed in recent years, and the perfection of arrangements of the local committee, both for the accommodation of the visiting veterinarians and their wives and for furthering all that goes to make a meeting successful, were all that could be asked and more than could be expected.

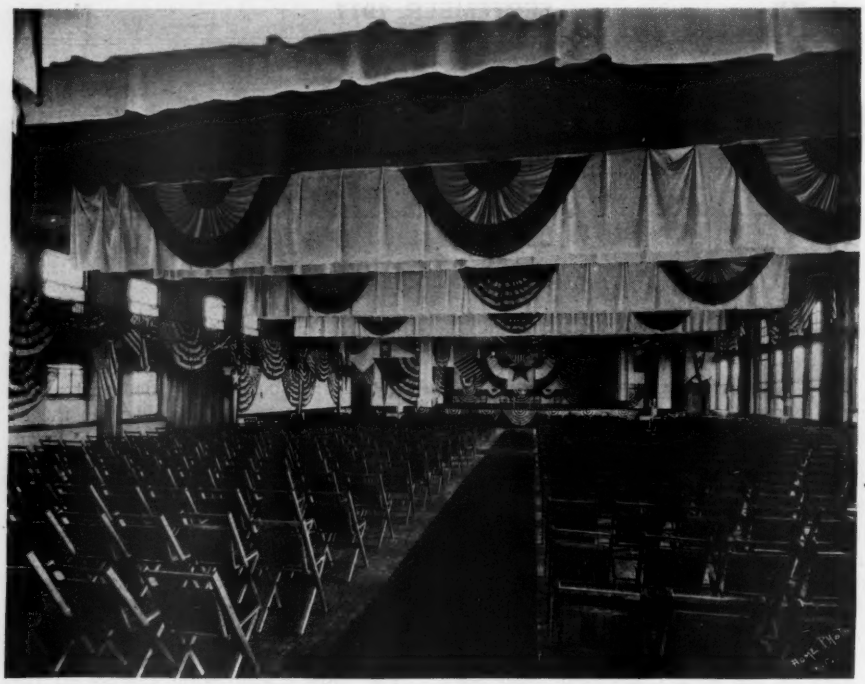
These splendid favoring factors—the fine weather, the excellent hotels, the pleasant quiet meeting rooms and the perfection of arrangements, were not lost on the members and visitors attending the meeting and contributed in no small degree to making this the most successful meeting of the association. Perhaps the most noticeable thing about the whole meeting was the large number in attendance at every session. This in itself was a convincing demonstration of the advantages of holding the meeting in a building apart from a large metropolitan hotel and from distractions of the downtown center where the noise of passing cars and street traffic have at former meetings so disturbed listeners and interfered with the hearing of papers and discussions presented as to cause many to leave the sessions for visiting among friends and acquaintances in the hallways.

The most encouraging feature of the meeting was the extraordinary number of members admitted to the association at this time, 553 in all—more than 100 more than the record number of last year. This number of applicants for membership was largely a tribute to the efficient work of Secretary Merillat. One could almost trace the peregrinations of our secretary by the number of applicants from the various states. For example, of the 573 veterinarians elected to membership, about 125 were from Illinois. The results of various trips that the secretary has made in attendance at state

association meetings were vividly apparent in the applications from Oklahoma, where Dr. Merillat attended the state meeting and increased the membership from the state 300 per cent; in Arkansas where a similar visit to the state veterinary association increased the membership 400 per cent; in Mississippi where the increase in membership was very large as a result of his visit to that state. That as a business proposition for the association Dr. Merillat is a splendid investment was evident in more ways than one, but in none more plainly evident that in the shower of applications that resulted from every state in which he had appeared during the year.

The attendance at the meeting totaling nearly 1,500 was about what was to be expected. Some had expected that the central location of Kansas City would result in a considerably larger attendance there than at any meeting elsewhere. The unsettled conditions growing out of the war and the fact that several hundred veterinarians have already been commissioned in the veterinary officers' reserve corps and assigned to duty or are momentarily expecting such assignments, may have contributed to no small extent in reducing what would otherwise have been a record attendance.

The ladies, who accompanied the veterinarians to Kansas City, carried away memories of one of the pleasantest week's they had ever enjoyed. The ladies of the local committee had planned for their entertainment during every day and almost every waking hour. Among the social features might particularly be mentioned auto tours, shopping tours, a card party at the Hotel Muehlebach, a visit to Electric Park, a visit to Armour's packing plant, a visit to the National Biscuit Company, a banquet, luncheons, etc., etc.



Auditorium, Kansas City Veterinary College. The general sessions of the recent Kansas City A. V. M. A. meeting were held in this room, which comfortably seats 1,500. The beautiful decorations were in fine accord with the patriotic fervor of the whole meeting.

Ladies' Auxiliary

A step which may prove a very important one was taken at this meeting—the organization of a ladies' auxiliary to the A. V. M. A. The destinies of the new organization were entrusted to the following officers during the coming year: Mrs. W. Horace Hoskins, president; Mrs. A. T. Kinsley, first vice president; Mrs. R. P. Marsteller, second vice president; Mrs. T. H. Ferguson, third vice president; Mrs. Chas. E. Cotton, recording secretary; Mrs. Ashe Lockhart, corresponding secretary; Mrs. H. Jensen, treasurer. The organization begins with a membership of fifty-five. It is expected that it will be permanent and find many opportunities for forwarding veterinary interests and veterinary service in the country. Just at this time it is giving consideration primarily to what it may do to aid in the war. It is expected that such aid and comfort as the members may be able to give will be tendered to the families of veterinarians who engage in military duties that take them from their homes. They also expect to lend their aid to the A. V. M. A. in raising a fund for the relief of veterinarians of the allied armies (including, of course, the United States) and their families.

Luncheon given the Ladies' Auxiliary of the A. V. M. A. by ladies of the Local Committee.

Army Relief Fund

No finer action has ever been taken by the A. V. M. A. or by any association than the one taken at Kansas City in starting a fund for the relief of veterinarians of the allied armies and their families. President Cotton appointed a committee to take voluntary subscriptions to this fund. Dr. John H. Blattenberg, of Lima, Ohio, was made chairman of this committee and Dr. Tom E. Smith, of Newark, New Jersey, was made treasurer. The committee called for subscriptions during the meeting and in a few minutes nearly $4,000.00 was subscribed. The work will be continued by personal solicitation, and it is hoped to greatly augment this amount. Subscriptions from veterinarians not members of the association are earnestly desired. Non-members may be assured that this fund will be used to the best advantage in the relief of needy veterinarians and their families in all the armies now fighting the battles of democracy and human liberty. Subscriptions may be sent to the chairman or the treasurer of the committee as given above or to Secretary L. A. Merillat, 1827 S. Wabash Ave., Chicago. As a convenience to subscribers the American Journal of Veterinary Medicine will be glad to accept contributions to this relief fund and forward them to the committee. In any case a list of those subscribing will be published from time to time. The list of those contributing on the first call of the committee follows:

Individual Subscriptions

One Hundred Dollars

Dr. George B. McKillip, Chicago; Dr. D. M. Campbell, Chicago.

Fifty Dollars

Dr. S. Brenton, Detroit; Dr. J. T. Hernsheim, Chicago; Dr. L. R. Webber, Rochester, N. Y.

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Twenty Dollars

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Medical Association; Kansas State Veterinary Medical Association; Montana State Veterinary Medical Association; Oregon State Veterinary Medical Association; California State Veterinary Medical Association; Tennessee State Veterinary Medical Association; Connecticut State Veterinary Medical Association; Oklahoma State Veterinary Medical Association; Indiana State Veterinary Medical Association; Mississippi State Veterinary Medical Association; Chicago Veterinary Society; Northwestern Ohio Veterinary Medical Association; Keystone Veterinary Association of Philadelphia.

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Kansas City Veterinary College; McKillip Veterinary College; Chicago Veterinary College.

Fifty Dollars

New York State Veterinary College of University, N. Y.

Twenty-five Dollars

St. Joseph Veterinary College.

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Twenty-five Dollars

Lathrop Serum Co., Lathrop, Mo.; Royal Serum Co., Kansas City; American Breeder, Kansas City; American Veterinary Supply Co., Kansas City; Purity Biological Laboratories, Sioux City, Ia.

Ten Dollars

American Vacuum Syringe Co., Oklahoma.

Miscellaneous

A. V. M. A. members of the Division of Veterinary Science, University of California, $50; a few veterinarians of the Alumni of the Ohio State College, $68; various members and visitors about $50.

Visit to Armour's Packing House

One whole day of the meeting was given over to a tour of Armour's packing plant and an examination of the elaborate and highly educational pathological display that had been arranged by the local Bureau of Animal Industry employes.

In the evening a patriotic program was given at the Hotel Muehlebach, where several speakers talked about the war and our part in it.

Annual Banquet

Probably no banquet that the association has ever held was more largely attended than the banquet at the Hotel Muehlebach on Thursday evening of convention week.

Dr. W. H. Dalrymple acted in the capacity of toastmaster in a highly successful way. The post-prandial oratory was on the whole considerably above the average of after-dinner speeches, even at annual banquets of the A. V. M. A.

Dr. F. Torrance, Veterinary Director General of Canada, was the first speaker. He was happily introduced by the toastmaster as a Scot, who keeps the faith, the Sabbath and everything else he could lay his hands on. Dr. Torrance's subject was "The Veterinarian of the North" and dealt largely with the part that the veterinary profession of Canada has taken in the world war. Dr. Torrance said that his own immediate force, thirty-two veterinarians, joined the military and that a number of them had distinguished themselves at the front and received military crosses, rapid promotion and other evidences of appreciation from the military authorities. He stated that of all the Canadian veterinarians who had entered military service, only one had been killed in battle. Canadians believed from the first that the Allies would be victorious in the war, and now that the United States has entered the conflict, any doubt that may have existed in the minds of some had been removed and that they faced the matter with courage and hope and every expectation that we are approaching the last stage of the war.

The toastmaster next introduced Dr. J. F. Winchester, of Lowell, Mass., as a venerable representative, who spoke for the "Veterinarian of the East." Dr. Winchester said he first attended an annual meeting of the A. V. M. A. in 1866 and that he had attended all but four annual meetings since that time. He stated that but two subjects were discussed at the early meetings, the constitution and by-laws and contagious pleuropneumonia. He told of the successful eradication of contagious pleuropneumonia and of foot-and-mouth disease. He related the events leading

up to the discovery of the bacillus of tuberculosis by Koch in 1882 and stated that only five years later in 1887, Massachusetts on the advice of the chief veterinarian (himself) had scheduled the products of tuberculosis cattle as a menace to human health. This Dr. Winchester said cost him his political life. He spoke of the failure of Masschusetts when it tried to eradicate tuberculosis by the same plan (the slaughter method) that foot-and-mouth disease and contagious pleuropneumonia had been eradicated.

Dr. Geo. H. Glover, of Ft. Collins, Colo., spoke for the "Veterinarian of the West" and must be conceded to have made the hit of the evening. His speech was pointed, logical, forceful and eminently timely and sprinkled throughout with anecdotes told as only Glover can tell them. His plea was in the main for coöperation between all veternarians, pointing out the disastrous effects of the lack of coöperation among practitioners and between practitioners and livestock authorities. Dr. Glover invited the association to meet with the Colorado veterinarians at Estes Park in 1919, and assured them that they would be a mile nearer heaven than they would get any other time in this world or perhaps in the next.

Dr. Winchester's reminiscences and Dr. Glover's advice had extended to a time when Dr. J. A. Kiernan, the fourth speaker, had but twenty minutes in which to make his address and catch a train. His feelings in the matter he explained could best be conveyed by a story he once heard of a man who had been sentenced to twenty years imprisonment for some heinous crime. The judge asked him if he had anything to say for himself. He replied, "Only this, if the court please, I just want to say you are mighty blankety blankety blank liberal with another man's time." Dr. Kiernan said that more than 200 veterinarians in the employ of the Bureau of Animal Andustry were within the draft age and that these and many others had been enrolled in the veterinary officers' reserve corps. He said that this would interfere not a little with various projects that the Bureau had under consideration, that it might delay the eradication of the Texas fever tick for another year, that it might slow down the progress of hog cholera eradication and limit the work in tuberculosis control, but that it augured no good for the Kaiser and after all his eradication was more desirable than the eradication of other plagues.

Dr. R. M. Gow, State Veterinarian of Arkansas, spoke for the "Veterinarian of the South" and invited the association to hold its 1919 meeting at New Orleans, telling those present that even if Estes Park were a mile nearer heaven than New Orleans, it might be just as well for veterinarians to come to New Orleans and see the other side during this life and prepare for the future.

The speaker scheduled to respond to toast "The Animal Industry" was not present, and Dr. N. S. Mayo was drafted and responded in his usual happy manner, stating that no system of agriculture ever had been, or ever could be permanent that did not include animal industry as an important part of it, not only because the fertility of any land must be depleted if animals are not kept to replenish it, but because the breeding of animals and their associations with man were themselves important contributing factors to civilization and had been since the first savage obtained his first wild dog and taught it to share his all.

Mrs. F. H. Schneider, of Philadelphia, who spoke for "The Ladies," described in some detail the organization of the ladies' auxiliary to the A. V. M. A., expressed the highest appreciation of the splendid entertainment given them during their sojourn in Kansas City and assured her audience that all had been harmonious with the ladies.

Colonel Oliver, of the British Army Veterinary Service, spoke at length for "The Army Veterinarian." Colonel Oliver has spent most of his life in the British Army, much of it in out of the way places. He described his work in Sudan, in India and in the Boer war, and the past two and one-half years in France, having come to this country in connection with the remount service only six weeks ago. Colonel Oliver con-

trasted the wastage of horses in the Boer war and the conservation in the present war. In the former war, the loss was about fifty-five per cent a year and in the present war it is considerably less than ten per cent a year. He branded as false and malicious the reports that the average life of a horse was only a few days after it reaches the front. He stated that quite on the contrary the horse's conditions were as favorable and its period of usefulness likely to be quite as long at the front as it is in ordinary commercial work in the cities. He said that veterinarians in the army were seldom, almost never, exposed to rifle fire, which is the most dangerous, but that those at the front were frequently under shell fire, which may be described as being more casual. The mortality in the veterinary corps has been light in the present war.

BUSINESS SESSION.

Address of Welcome.

Dr. A. T. Kinsley welcomed the veterinarians and their friends to Kansas City, as follows:

Members of the American Veterinary Medical Association and visitors: It is certainly a pleasure to welcome you to our city—a city practically in the center of the United States. Kansas City is only about eighty years of age. You may be interested to know that it originally was a fur trading station, a little shack on the river some seventy, and even only sixty, years ago. In fact, Kansas City as a corporation is second in age to Independence, ten miles east, and to Westport, now a part of Kansas City. We have only about half a million people, but we feel fortunate in being located in the central part of an agricultural district that is second to none in the world.

Ladies and gentlemen, we welcome you to Kansas City. We want you to feel at home. If you will let us know what is your desire and we can supply it, we shall attempt to do so.

President's Address.

In his presidential address, Dr. C. E. Cotton expressed his appreciation of the assistance given him by members of committees, by Secretary Merillat and by Editor Fish, stating that Dr. Merillat had been untiring in his solicitation of new members and in attending to the business of the association. The recommendation was made that the treasurer should receive a nominal salary. Dr. Fish was commended for his work as editor of the official journal, it being pointed out that in addition to his other duties outside of the association he was not only editor but also business manager of the publication and his task was oftimes a strenuous one.

Allusion was made to the numerous difficulties and new problems incident to reorganization under the new constitution and by-laws. The constitution directed that the executive board should arrange for carrying into effect the provisions of the constitution, but it required five months before the executive board could be elected. After consulting several members and authorities on constitutional matters, the president appointed a temporary board, which made it possible to outline the business affairs of the association under the new constitution.

After a year's experience in striving to carry out the provisions of the new constitution and by-laws, it was found that there were a number of changes necessary to eliminate ambiguities and conflicting sections. These proposed changes had been referred to the executive board, who would present the proper recommendations to the association in the regular course.

The secretary had found after consulting attorneys that the association had no legal status regarding the bonds of officers and that the organization could not continue to transact business and run the journal unless it had a charter. Since at the annual meeting of 1915 it had been decided to incorporate the association, although the matter was not then carried out, it was deemed inadvisable to continue to transact business longer without a charter, and the association was, therefore, incorporated under the laws of the state of Illinois.

In view of the world war, the army veterinary service had come up for consideration, and upon the president referring the matter to the executive board, he had been authorized to take such action as he deemed necessary. Dr. C. A. Marshall was appointed as special chairman of a committee on army service, and due to his able work and that of his colleagues in this connection it was stated that the outlook appeared bright for veterinarians to obtain the same rank in the army service that officers of the medical corps have.

Veterinarians were urged to advise and assist in the conservation of breeding and food producing animals, as well as in the raising of more horses, by encouraging farmers to increase the quantity of livestock and advising them in the control of animal diseases. The army would also need the services of many veterinarians, and those who were able were earnestly importuned to volunteer their services. A recommendation was made that the association send a message to President Wilson, offering the services of the organization as a unit.

The attention of the assembly was called to the necessity of our assisting veterinarians in other countries who were in straitened circumstances due to conditions brought on by the world war, and that America should assume leadership in the brotherhood of veterinarians. It was stated that many veterinarians in England, Belgium and France were suffering and some in actual want, and the hope was expressed that a fund might be established to assist our brother veterinarians in the allied countries.

While appreciation of the wonderful advances made by the veterinary profession in the last thirty years was voiced by the president, yet he averred that the association has only 2,600 members when it should have 15,000. He said there were 20,000 veterinarians in America, and the lack of interest in joining the national organization was

held to be due to the apathy of individual practitioners rather than to any fault of the association itself. It was suggested that a campaign be inaugurated to induce all worthy veterinarians to become members, the declaration being made that every veterinarian should be a member of his state and his national association, and that he owes it to himself and to his profession to give his allegiance and support to the organization.

That the activities of veterinary practitioners are coming to be restricted more and more to the dairy and breeding districts was mentioned, but it was asserted that the inroads made upon the horse industry by gasoline motors are more than compensated for by the increased activity in the breeding of food producing animals. Attention was directed to the fact that the Bureau of Animal Industry is adding to its number of employees, that the army veterinarian has finally been recognized by Congress and that this affords excellent opportunities for the young and ambitious, properly educated veterinarians.

The president further stated that the veterinarian of the future must be a man well trained to fill his position. In order to be recognized by other professional men he must have the same standard of education, culture and efficiency. The time of the horse doctor has passed. The old argument that the country needs practitioners and that we wish to give the poor country boy a chance to get an education has become threadbare and stale. All other professions have closed their doors to this kind of men. The progressive and successful farmer and breeder of today is a student of animal husbandry, has a knowledge of breeds and types of animals, of feeds and feeding, and in many instances he has pursued a course in the study of diseases, especially infectious diseases of animals. The veterinarian must not only serve these owners, but must also obtain

their respect and confidence. To do this he must be a man of broad knowledge and thoroughly trained in his general subjects. This necessitates obtaining a general as well as a technical education. The results of the examination of the Minnesota state veterinary examining board showed conclusively that the trouble lies in the lack of preliminary training, because in most cases where the man failed in the preliminary requirements he failed in the technical subjects also.

The division of members of the association into two groups, supporters of private school and those who believe in the state schools, was said to obtain and was characterized as unfortunate. While it was acknowledged by the speaker that in the earlier years of veterinary education in this country the private schools did good work, yet he alleged that in later years they have not been keeping up with the standard that should be required by the profession. The minimum preliminary requirements for a veterinary education were designated as consisting of a standard high school course covering four years, and in addition the veterinary colleges should adopt a four-year course. The hope was expressed that this would be effected and that from now on there would be but one standard of veterinary education on this continent, and that the best.

Report of the Secretary

Dr. Merillat stated that this had been an unusual year in many respects. It was the first full year of the association's adventure into the publishing of an official journal and, therefore, the first opportunity to determine the wisdom of the enterprise from a financial point of view. The wisdom of publishing a journal instead of the annual report had not been seriously questioned, but the financial success was something which could not be determined beforehand. It was stated that although the business had sometimes traveled close to bankruptcy, yet there were now prospects of showing a balance in the treasury.

One of the many tasks of the year was adjusting the working relations between the secretary's office and the journal office, and this had been satisfactorily accomplished.

At the beginning of his term of office there were 1,700 members in arrears; this number had been reduced to 173. Among these 173 were included some resignations, deaths and members whose addresses had been lost. The loss, therefore, was insignificant.

Attention was called to the uneven representation given to some districts, district No. 2 including almost half the membership of the association and yet having only one representative.

The necessity for further increasing the membership was brought out and the records of the association cited showing there were some 10,000 eligible veterinarians in the United States and Canada who were not members.

The number of members in the association at that time in good standing was given as 2,200; delinquents, 173; applicants, 476; members of the honor roll, 58; honorary members, 28; making a total membership of 2,734.

Report of the Committee on Anatomical Nomenclature.

In the absence of the chairman of the committee, Dr. S. Sisson, Dr. H. S. Murphy presented the report, in which the regret was expressed that they were unable to make any progress during the past year owing to the fact that the last report of this committee had not been published. The so-called report which appeared in the official journal of the association in February was not the full report, and action must consequently be delayed until the appearance of the entire report. It was recommended, therefore, that the report be published and that the committee be continued and authorized to obtain the views of their colleagues.

Report of the International Commission on Bovine Tuberculosis

The commission held a meeting on December 4, 1916. Since the publication of their original report in 1911 the commission had been maintained only as a consulting body. But little new has since been discovered with regard

to tuberculosis. Therefore, it was decided to recommend that the commission as originally constituted be discontinued. However, in view of the great importance of bovine tuberculosis, it was deemed desirable for the A. V. M. A. to appoint a special committee to which questions pertaining to this subject might be referred. The suggestion was also made that a similar committee might be appointed by the U. S. Live Stock Sanitary Association, and in such an event that the two committees work together with a view of preventing the expression of conflicting opinions regarding this question. It was urged that close watch be kept on bovine tuberculosis and also on methods of applying the tuberculin test. The following resolution had been adopted by the commission at its last session:

"As the International Commissioner on Bovine Tuberculosis realizes that its main work has been completed and sees no special reason for the continuance of its existence, it requests the A. V. M. A. to relieve it of its duty. The commission suggests the appointment of a small committee which can advise the association with respect to bovine tuberculosis."

Report of the Treasurer

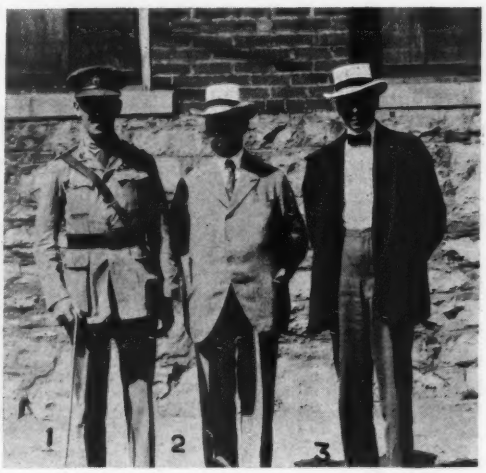
The report of the treasurer, Dr. F. H. Schneider, was printed and distributed among those present at the association. It showed the total receipts of the association during the past year to be $11,599.03; total expenditures, $9,330.68; leaving a balance of $2,268.35. The report on the journal fund showed receipts from all sources, chiefly, of course, from the association, of $9,472.51 and expenditures $7,697.99, leaving a balance of $1,774.52.

Reports of Other Committees

The Committee on Legislation reported on the Lobeck bill and on a bill introduced into Congress providing for rank in the army veterinary service equal to that given in the medical service.

The Auditing Committee after examining the books of the secretary and treasurer found them to be correct.

The Committee on Salmon Memorial Fund had been less active during the past year owing to the great demand from many organizations in Europe seeking help from the members of our profession. It was recommended that since honorary members who were formerly exempt from the payment of dues must now pay dues, under the new constitution. One-half of these dues should be set aside for the Salmon Memorial Fund.



1, Col. Oliver; 2, Dr. F. Torrance; 3, Dr. R. A. Archibald.

The Committee on Army Veterinary Service reported efforts made to obtain more adequate recognition for veterinarians called into the army service by reason of the war, and to coöperate with the government in rendering prompt and efficient veterinary assistance in military undertakings during the present conflict.

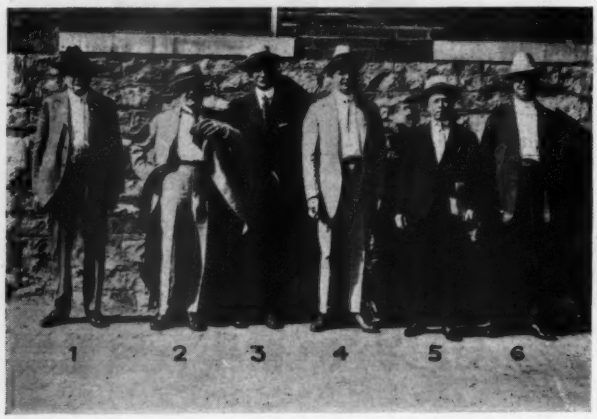
Election of Officers

There were four nominations for the office of president: Dr. Frederick Torrance, Dr. R. C. Moore, Dr. C. A. Cary and Dr. A. T. Kinsley. Dr. Kinsley withdrew his name, as a nominee leaving three candidates in the field. The total number of votes cast were 331, and of these Dr. Torrance received 173, Dr. Moore 124 and Dr. Cary 34. Dr. Torrance was, therefore, declared elected president. Upon motion of Dr. Moore, seconded by Dr. Cary, it was voted to make the election of Dr. Torrance unanimous.

Five vice-presidents were to be elected, and the nominees and votes cast for each

were as follows: Dr. John H. Blattenberg, 188; Dr. C. M. Haring, 154; Dr. H. Jensen, 145; Dr. John S. Anderson, 132; Dr. S. H. Ward, 131; Dr. S. F. Musselman, 114; Dr. George Dunphy, 93; Dr. F. A. Bolser, 91; Dr. W. H. Robertson, 89; Dr. Thos. E. Smith, 84; Dr. T. H. Ferguson, 77. The following were, therefore, declared elected: Dr. John H. Blattenberg, first vice-president; Dr. C. M. Haring, second vice-president; Dr. H. Jensen, third vice-president; Dr. John S. Anderson, fourth vice-president; and Dr. S. H. Ward, fifth vice-president.

Dr. L. A. Merillat was unanimously elected as secretary, as was also Dr. F. H. Schneider as treasurer.



1, Dr. R. C. Moore; 2, Dr. Joseph Hughes; 3, Dr. G. H. Roberts; 4, Dr. C. E. Cotton; 5, Dr. J. H. Blattenberg; 6, Dr. E. L. Quitman.

Only two nominations were made for the office of delegate at large on the executive board, and the election gave Dr. A. T. Kinsley 143 votes, and Dr. V. A. Moore 130. On the motion of Dr. Moore the election of Dr. Kinsley was made unanimous.

Invitations for the association's 1918 meeting were presented from Atlanta, Ga.; Philadelphia, Pa.; Columbus, Ohio; Estes Park, Colo., and Madison, Wis. On the motion of Dr. N. S. Mayo the selection of the next meeting place was referred to the executive board.

Report of the Executive Committee

The executive committee offered the following retroactive resolutions endorsing the action of the December, 1916, meeting of the executive board which were voted upon and passed: That the fiscal year begin the first of September instead of the first of January; that the sum of $500 be appropriated for the legislative committee for the Lobeck bill; that the salary of the secretary be $1,200 a year and that of the editor of the journal, $1,500 a year; that all monies collected be deposited with the treasurer and withdrawn only upon duly approved vouchers; that the treasurer be allowed not to exceed $500 a year for clerical expenses; that the funds of the association be divided into an association fund, journal fund, Salmon Memorial Fund and special fund; that Porto Rico and the Virgin Islands be added to District No. 3 and that members from the Orient be listed in District No. 4; that a sufficient sum of money be set apart to pay subscriptions to the journal of honorary members.

The executive committee reported unfavorably upon a proposed amendment to the constitution presented by Drs. S. Stewart, R. C. Moore and George B. McKillip, aiming to make the entrance requirements for acceptable veterinary colleges the same as those for first grade civil service in the U. S. Department of Agriculture. Upon being put to vote, the action of the committee was sustained.

Dr. L. A. Klein offered an amendment to the constitution with a view to establishing higher entrance requirements and standards of education in veterinary colleges recognized by the A. V. M. A. This will come up for action at the next annual meeting.

A number of minor changes in the wording of the constitution and by-laws to correct ambiguities and conflicting sections were presented and passed.

The committees on necrology and resolutions submitted their reports and a telegram of felicitation from the association was sent to Dr. Liautard, of France. It is just sixty years since Prof. Liautard established the first veterinary college in the United States—the New York College of Veterinary Surgeons in 1857. In 1899 the American Veterinary College, established in 1875, was amalgamated with this one

which was then known as the New York-American Veterinary College. In 1913 it was made a state institution and a part of the New York University at New York City. Dr. W. Horace Hoskins is now dean of this the oldest veterinary college in the United States.

In recognition of the work done by Dr. P. H. Ransom, of the Bureau of Animal Industry in investigating animal parasites, he was unanimously elected an honorary member of the association.

Section of Sanitary Science and Police

Chairman's Address

Dr. J. G. Wills, of Albany, N. Y., chairman of this section, opened the meeting by an address, in part as follows:

Since the last gathering of this association, our nation has entered into active participation with other powers against a common enemy. The ultimate outcome will undoubtedly be decided quite as much through industrial enterprises as by the preponderance of destructive agencies. We have seen material amounting to millions of dollars annually disposed of as waste. It is said that much of this waste can be avoided if proper attention and care is exercised.

One of the greatest sources of the nation's wealth lies in its agriculture, and animal industry forms one of the most important subdivisions of that great industry. Any means whereby animals may be increased and the industry fostered will in turn produce stimulating effects upon other widely diversified interests. It is particularly important that diseases of livestock be prevented. The vast toll exacted by tuberculosis, infectious abortion, hog cholera, Texas fever and other infectious diseases, is a distinct reflection on the sanitary police. With the exception of Texas fever and possibly hog cholera, we can scarcely feel elated over the progress made.

In the handling of several of our most destructive maladies, it has been impossible to find any practical procedure that has proved satisfactory in all cases. Control over transmissible infections touches all phases of veterinary science and reaches many other activities in medicine. Limitation and reduction of diseases in animals has a bearing on the elimination of diseases in humans.

The Advantages of Testing Pure-Bred Herds

Dr. H. S. Ward, of St. Paul, State Veterinarian of Minnesota, stated in his paper that for the past six years Minnesota has required the seller of pure-bred cattle to give to the purchaser a certificate of health issued by the livestock sanitary board showing the animals to have been tested within a year and to be free from tuberculosis. North Dakota has enacted a similar law, and it was hoped that other states will do likewise. It appears, however, that the problem of obtaining similar requirements in other states has been difficult of solution, the policy of inducement rather than compulsion having been recommended as being easier of accomplishment. Unfortunately for the breeding industry, laws to control tuberculosis do not meet with favorable reception until adequate reimbursement is made for animals condemned.

A movement is on foot by the states interested in keeping out animals from diseased herds, to blacklist herds from which importations of diseased cattle have been received during a certain period. This information is imparted to those in control of sanitary work, and intending buyers are warned not to purchase from such herds. It is not always possible, however, to get in touch with intending buyers.

The names and addresses of breeders who have shipped cattle into the state of Minnesota are on record. The location of diseased herds in other states is thus made possible. It is known that over 200 breeders in other states have furnished Minnesota with diseased animals. The state would also desire to learn of clean herds and even to pay

for the information if they could be located.

There should not be much difficulty in obtaining legislation that would protect a buyer. The Minnesota law is an example of the protection that should be afforded the purchaser. Under this law all persons selling or representing themselves as selling pure-bred cattle should make a report to the livestock sanitary board on blanks furnished to them, stating the number of cattle sold, age and sex and to whom sold, and before delivery thereof such cattle shall be tested with tuberculin and be certified by the livestock sanitary board; provided, that no certificate will be required of such cattle sold within one year after being tested by the livestock sanitary commission. No certificate is required for animals under one year of age.

If such a law cannot be obtained, then the farmer should be educated to buy only upon a guarantee of health. The farmer should be enlightened to employ a veterinarian to examine cows for soundness just as horses are examined. Unfortunately an individual will seldom try to recover through the courts when diseased animals have been sold to him, especially when the seller and buyer are residents of different states.

If the state were to approach a few breeders and induce them to place their herds under state supervision, pointing out that this would mean a cheap and highly successful form of advertising and permit unrestricted and free movement of their cattle, success would follow sooner or later and other breeders would fall into line.

A nation-wide attempt will soon be made to start the eradication of tuberculosis. The breeders of pure-bred stock will at first consider that an injustice is being done them and will argue that the same rules should apply to all grades of cattle. But grade cattle do not enter into the cattle business to the same extent that pure-bred cattle do since they are commonly sold only for slaughter.

A conservative estimate of the prevalence of tuberculosis in pure-bred herds may be set at fifteen per cent. Assuming breeders sell 2,000 head of breeding cattle and fifteen per cent are diseased and that only one per cent find their way into uncontaminated herds: thirty new centers of tuberculosis would be established.

Some Studies in Forage Poisoning of Animals

Dr. Jacob Traum, of Berkeley, Cal., read an instructive paper on this subject, in which he confined himself mainly to the discussion of the importance of inanimate carriers of the disease and the resistance of tubercle bacilli. Experiments were made to determine the resistance of tubercle bacilli on top of the soil, under ground and in water. Bacilli mixed with feces and deposited on the soil were able to produce tuberculosis after four days; bacilli ten or twelve inches underground produced the disease after 140 days; and bacilli exposed in water produced the disease after 191 days. Disinfection of premises following tuberculin testing where ailing animals are found has been recommended in practice, but it was stated that the value of such a procedure was difficult to estimate from the evidence now at hand. Investigations lead to the belief that tubercle bacilli are more resistant to disinfection than other spore forming organisms. To be of value in practice the disinfection must have power to overcome the physical and chemical obstacles in which the bacilli are found and at the same time to kill the bacilli. A case was cited in which a healthy herd was removed into a clean barn which had been occupied by a tuberculous herd. The barn had been thoroughly cleaned, but not disinfected; none of the healthy cattle became infected. Thorough cleaning before germicides are applied was advised, and the implication was made that mechanical cleaning was of more importance and value than disinfection, but that the latter should not be neglected.

Channels of Infection by Localization

Dr. C. H. Higgins, of Ottawa, Canada, presented an interesting paper on tuberculous infection through local channels, outlining experiments conducted on guinea pigs which were infected by mak-

ing a pocket in the skin at the flank. When first resorting to this method, the object was to obtain a tuberculous abscess from which to procure organisms for miscroscopic examination. In this localized infection, the experimenters were impressed by the way in which it spread throughout the system. Several cases were described in which cattle had been experimentally inoculated, and the conclusion was reached that the extension of tuberculosis from localized lesions is comparatively slow and may be resisted and controlled at the site at which it gains entry. The experiments also seemed to demonstrate that tuberculosis may be only a localized infection and thus pass unnoticed after the most careful post-mortem examination. Therefore, greater care was urged in the methods of conducting post-mortem examinations. The channels of infection govern the localization of lesions, and infection comes from the gland from which the lymph supply is taken up.

The Tuberculin Test and Retest

This paper had been prepared by Drs. C. A. Marshall and H. W. Turner. The history of the tuberculin test was briefly outlined from its first use in Russia until its introduction into Pennsylvania by the late Dr. Leonard Pearson. No method was held to be more reliable than the subcutaneous, although the results were not always satisfactory, some animals failing to give a decisive reaction and having to be held for retest. The retest was first made in thirty days, but not being satisfactory, the time was extended to three months. Later this had been modified and the time for retest set at four to seven days. The preliminary temperatures were recorded the same as in the original subcutaneous test, but a special dose of tuberculin three times as strong as the original dose was used. The temperatures were taken every two hours until twenty-four hours, or longer if the temperature continued to rise or remained stationary at a point above the normal. The ophthalmic test is used in conjunction with the subcutaneous in these retests, and the intradermal is used in some cases in combination with the other two methods. The subcutaneous test was held to be superior to the others and used on cattle above six months of age. On applying retests questionable reactors were also submitted to the ophthalmic test.

Data was given regarding a comparison of the different tests as follows:

I

Number of animals tested, 125.

	Positive	Suspicious	Negative	Total
Subcutaneous test	65	7	53	125
Subcutaneous test (7 days later)	105	0	20	125
Ophthalmic test(time of retest)	81	4	40	125

Number slaughtered, 105; lesions, 97; no lesions, 8.

Used for food, 86; tanked, 16.

II

Number of animals tested, 238 (4 herds).

Negative to all tests, 74; positive to various tests, 164.

Positive to all tests, 99.

Positive to ordinary test, 123—119 lesions; 4 no lesions.

Positive to retest (7 days after) 159—149 lesions; 10 no lesions.

Positive to ophthalmic (at retest) 129—126 lesions; 3 no lesions.

III

Number of animals tested 132 (3 herds).

Negative to all tests, 74.

Positive to various tests, 58.

Positive to all tests, 10—lesions, 10.

Positive to ordinary test, 15—lesions, 14; no lesions, 1.

Positive to ophthalmic test, 45—lesions, 42; no lesions, 3.

IV

Number of animals tested, 84.

Negative to all tests, 51.

Positive to various tests, 33.

Positive to all tests, 18—lesions, 18.

Positive to ordinary tests, 26—lesions, 25; no lesions, 1.

Positive to intradermal tests (4 days after), 25—lesions, 24; no lesions, 1.

It was observed by Gilliland that people given ascending doses of tuberculin would often react for a period of time. He believed this to be due to a sensitization of the body cells. Therefore, he concludes if animals receive five to ten days later a larger dose they would give a strong reaction in tuberculosis or inactive results in non-tuberculosis. The best results are obtained ten days after

the original test and in conjunction with the ophthalmic test. Tuberculous animals were found to remain sensitive to tuberculin for a certain length of time after the original test. The original injection sensitizes them, i. e., makes them more susceptible to tuberculin. The ordinary subcutaneous test was recommended for use on animals where none were known to be tuberculous. Where ten per cent or more react, a retest with subcutaneous in conjunction with the ophthalmic was recommended. In animals under six months of age, the intradermal test was advised and it was recommended that it be combined with the ophthalmic where possible.

DISCUSSION OF ALL THREE OF THE FOREGOING PAPERS.

DR. A. S. COOLEY, Ohio: The more I see of this large question and the attempts we are making to solve it, the more confused I become over the many aspects of it. It has been my pleasure to do some work along the line of sanitary science and police in state control work. These problems are many and complex and not always the most pleasant to the men having control work before them. The department of livestock sanitary control and police has an important duty to perform in these times and at all times. It requires a skilled veterinarian and a man of good judgment whose years of experience help him to understand others that he may act fairly. It is necessary to be identified with the best interests of the community. A man interested in the stock raisers' interests should be more than a healer; he should be able to advise with reference to prevention of disease. The tuberculin test is no better than the man who makes it. Honesty and purposive action must be had or the channels of infection are widened. "Parlor certificates," if you please, or carelessness in making other certificates for the man the veterinarian is working for, cannot be tolerated if we are to exterminate tuberculosis.

1, Dr. G. Ed. Leech; 2, Dr. J. T. Hernschein.

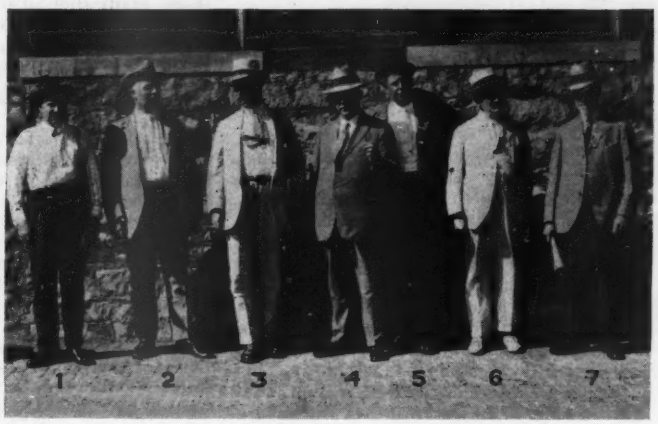
Breeders of pure-bred livestock will go across three or four states seeking pedigreed animals, but paying no attention to health. I have such a man in mind, whose herd of cattle has been over a number of states being exhibited at fairs. Reports were sent me by federal authorities at different places, and by Dr. Turner at Pittsburg, showing that animals from this herd were tuberculous and were placed in the rendering tank at different places. One animal from this herd was tested for export to South America and reacted. The compensation that the state of Ohio is giving for reacting animals has been increased for the third time.

At first the appraisement was limited to $75 for pure-bred animals and $50 for grades, indemnity 50 per cent. It has been increased to $200 and $75, indemnity 50 per cent, and now I don't know how high it will go.

The man in control work must be earnest and have a desire for coöperation. We as state authorities must look to ourselves occasionally and the regulations we put out. For instance, we may place 200 or 300 licensed veterinarians in our states on the approved list for the convenience of the shipper, and then send signed health certificates to them to fill out and ship direct. My experience has shown me that this is one means of disseminating tuberculosis, for the simple fact that when the seller is disposing of his cattle and the purchaser is going to him and trying to buy some of these cattle, he will ask the seller to suggest a veterinarian, and that seller is paying that veterinarian and that determines the condition sometimes. The approved veterinarian is the seller's veterinarian and paid by him to find or not to find what he wants, and then it depends upon the seller to have the veterinarian make the test, and it is sometimes, I fear, made in the interests of the seller. Dispersion sales have been made by men who have loaded the northeastern part of Ohio with tuberculous cattle. They have their tests made, they look all right on the face and are approved. Retests show tuberculosis. These subjects are of the greatest importance to the state and people. The locality having good health is a happy and prosperous people. Human beings are the

greatest agency in the spread of human or animal diseases.

DR. D. F. LUCKEY: This is a very interesting subject, and there are a few points in the papers which have been read that attracted my attention. Dr. Turner lays down the rule that when ten per cent of the herd show reaction, this herd should be retested promptly. It seems to me that some additional guide ought to be followed. If ten cows out of the 100 react and they are in the early stages of infection and upon postmortem show only limited lesions, the necessity for a retest in a short time would not be so great as if even only one reactor was found and that reactor happened to show on postmortem that it was in an advanced stage of the disease, an open case and a rank spreader of tuberculosis. In our state work when we find on autopsy that any one animal in the herd, regardless of the percentage, has probably been a rank spreader of tuberculosis, we are anxious to retest that herd, not once but two or three times or as many times as we can without getting the cattle immunized to the test.



1, Dr. A. T. Kinsley; 2, Dr. S. L. Stewart; 3, Dr. F. Torrance; 4, Dr. C. A. White; 5, Dr. Richards, Paola, Kan.; 6, Dr. G. W. Dunphy; 7, Dr. S. Brenton.

Dr. Traum's description of one case brought to my mind what has long been to me a very important idea in tuberculosis eradication work, and while it may only be a dream, I have drawn this conclusion from some eighteen years' experience in testing cattle for tuberculosis; and that is simply this: at some certain stage in the period of incubation or shortly thereafter, if an animal is injected with tuberculin an immunity is conferred. It is a very simple proposition it seems. Those who are in position to experiment or veterinarians who have a practice among herds that are probably badly tuberculous, may try to produce immunity by the periodical injection of tuberculin, say every fifteen days and I favor intradermally, preferably the filtrated product with the dead germs in it. The statement was made by Dr. Traum that an animal was injected with tuberculin and in eleven days given the intradermal test to which it reacted, but subsequently it failed to react and failed to show lesions on post mortem. It reacted in eleven days but never again. This is to a certain extent confirmation of the idea that if an animal is injected with tuberculin at the right time after infection, immunity may result.

I would take a herd of calves raised on skim milk and inject them every fifteen days until they were off the skim milk. I would give the calves some infection through the feed or give it internally and give them this injection every ten or fifteen days, and if what I have seen happen over and over again proves to be true, we might possibly drop on to a very simple and inexpensive method of immunizing animals against tuberculosis. This may be a dream, but I have seen a good deal of evidence, that if so it is a true one.

DR. F. TORRANCE: This subject is one in which you know all governments are very strongly interested. Control work to be effective must be based on scientific principles and upon well ascertained facts. If we start in the wrong direction and apply methods that are not thoroughly reliable, we are not going to land anywhere. Heretofore, we have been basing our tuberculosis work on the fact that retests are necessary and should not be made too recently after the original test. I am quite convinced and my predecessor was quite convinced that the first test is far more reliable than the second one, but I should like to congratulate the reader of the paper on retesting for bringing before the members of this associa-

tion the fact that a retest seven days after the original test may be even more accurate than the original test. We have been supposing that it was necessary to allow a considerable lapse of time to come between the two tests. Our official retests are not made earlier than three months after the original test, and it is often a great inconvenience to importers to have to wait all that time before a retest can be made. If further experience in retesting at seven days proves that this is a reliable method, I think a very great step will have been taken in advance of our previous custom. It will obviate a great deal of annoyance and delay to shippers and aid very greatly in eliminating tuberculosis from herds under control.

The other papers which have preceded this one of a more technical character, I do not wish to discuss, but I would like to conclude by assuring this audience that I am in the field of battle against tuberculosis and the government of the Dominion of Canada is going forward just as fast as we can get public opinion to back us up. We realize that any steps taken in advance of public opinion are sure to bring opposition and may result in setting us back. It is better to plan our campaign so that education precedes action, and I am glad to say our livestock men are now taking a different attitude toward tuberculosis than they did a few years ago. They are now asking to have action taken against tuberculosis. This change, I think, indicates we are approaching the time when governments will take a greatly enlarged sphere of action with regard to tuberculosis. Up until the present time we have been content with testing exports and imports and trying to do something in that way, but after all that is simply touching the fringe of the question. Unless we can clean up the herds from which these animals are coming and eliminate the tuberculous material at its source, we will never be free from this trouble.

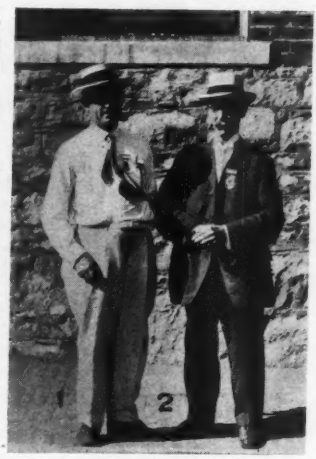
DR. J. A. KIERNAN: As most of you know, the Bureau of Animal Industry on May 1, 1917, created the Tuberculosis Eradication Division—a great phrase as it is "eradication"—but the bureau believes that tuberculosis can be eliminated from *all* the cattle and *all* the swine in this nation; otherwise, it would not attempt the work. To accomplish that end conditions must be favorable, of course, and what is meant by favorable conditions are the conditions that obtained in the territory where pleuropneumonia was eradicated many years ago, in the territory and states where foot-and-mouth disease has been eradicated on several occasions, in the territory in which cattle and sheep scab was eradicated, in the territory where the control and eradication of hog cholera is in progress. There must be the same condition, the same hearty coöperation, the same earnest endeavor of the farmers that have given their coöperation to the department and to the various states in the eradication of the cattle tick, one of the greatest pieces of livestock sanitary work that has ever been accomplished. We believe that the people of this nation are prepared to enter into a campaign to eradicate tuberculosis, not a spontaneous campaign covering forty-eight states at one time and all the counties of those states. No. The work as it is taken up now is divided into three projects: first, the subject as discussed by Dr. Ward, eradication of tuberculosis from pure-bred herds; second, the eradication of tuberculosis from circumscribed areas; and third, eradication of tuberculosis from swine.

The bureau has recently opened offices at several points in the country, coöperating with the officials and the livestock owners of those states in the eradication of the disease from pure-bred herds. Up to the present time a considerable amount of good work has been accomplished, and it is expected that with the increasing years the results will increase likewise; but in this work as in the other work outlined, it is not the veterinarians who are going to accomplish this alone. It is not legislators or legislation that is going to eradicate disease; it is not livestock sanitary boards, but it is the people, the livestock owners of this country. We are here as a body of veterinarians ready to go into any state to combat any of the contagious or infectious diseases. Most of us are equipped with the principles and the right means and methods of accomplishing these results, but until the farmers, the livestock owners of this country, are willing that we shall proceed with the work, it would avail nothing to have the most rigid laws enacted by the various states. It would avail nothing to have Congress appropriate millions of dollars for this campaign. It would avail nothing to have state legislatures appropriate millions of dollars. But when the livestock owners of this country say, "We are ready to eradicate the disease," first, in a small county or in a few counties, and we there put on a quarantine and protect the cattle owners of that district from the invasion of tuberculous animals and then proceed with the testing of all the cattle in that restricted area, getting rid of the reactors and keeping at that territory until the disease is eradicated, and then applying the quarantine line around it, and protecting it and extending the campaign into other counties, you will obtain satisfactory

results. The same principles that have worked in all other sanitary work will apply to the eradication of tuberculosis; but it will take a large army of men, greater than most of the states have any conception of, for this eradication work. For instance, how are they proceeding so successfully with the eradication of the ticks in the South? Because primarily and fundamentally it is a popular work. It is a work of the people. The people signify at the polls whether they shall eradicate the ticks or not, and I believe that principle should apply to tuberculosis before we can get at it. Let the people of the state pass a law putting it up to the people whether they shall eradicate the disease, and if the people of the community want to do it, let the commissioners of the community make preparations for the work.

In Mississippi they are cleaning up the ticks this year. Because the bureau is behind it, they have forty-one inspectors in one county, and 600 inspectors in the state. What could a force of 600 inspectors do in one state where they wanted to eradicate tuberculosis? They could make a showing of satisfactory progress in that state. Some of you may doubt whether tuberculosis can be eradicated, but the work that has been done in the District of Columbia and in Virginia and in Maryland is an argument that no one can successfully combat. When the work started eighteen years ago, they had ten per cent. of the cattle tuberculous. The disease has been eradicated from herds where fifty and seventy-five per cent. were infected. Herds free from tuberculosis at the inspection have been maintained as free herds, and those badly diseased have been cleaned up and preserved as free herds, and when a thing has been done in a hundred herds and in five hundred herds, isn't it sufficient demonstration to the owners and the livestock sanitarians and the whole multitude of the country that that work is an example—a demonstration of a thing done not only once, but a thousand times, which gives us the assurance that tuberculosis can and will be eradicated.

DR. J. I. GIBSON: I do not feel capable of discussing this subject or adding anything to what we have enjoyed this afternoon. I think these papers certainly cover advanced ground in dealing with tuberculosis. Dr. Ward's theories are correct. I find when a herd is promptly blacklisted by a state to which tuberculous animals have been sent, the results are favorable. That man wants to do something. Men who are breeding pure-bred cattle in all the states are smart enough to know what is best for them when you really wake them up. Of course, there has always been an insidious opposition to the tuberculin test, and to the whole matter of interstate shipment inspection. Men who would not publicly assume such an attitude are privately against the test and against the veterinarian, and against everything that tends to improve the situation. We have them in Iowa. At our last legislature last winter, we attempted legislation along the line of tuberculosis eradication. We had what we thought was a very excellent bill. It passed the senate with practically no opposition. It was favored by the agricultural committee of the senate and passed without any changes by the appropriation committee, but when we got to the house with the bill, these secret antagonists got busy, and they were too strong for us. The blacklist will bring some of them around, so I have no objection to that method. I am in favor of close coöperation between the authorities of the various states in the protection of each other and in the protection of the cattle herds, especially those that are free from tuberculosis. I agree with Dr. Torrance that the retest of suspicious animals in four to seven days will prove a great relief to the cattle business of the country. Many a good deal has fallen through, many a big sale has been cancelled because we thought we had to wait three months to be sure of the retest. I am very glad to know a retest can be made in so short a time. It will be worth a good deal to the cattle dealers to know this. I believe with Dr. Kiernan that tuberculosis can be eradicated ,just as any other disease. We use the argument that when we succeeded in eradicating foot-and-mouth disease from twenty-three states in the Union, there is not any question but that we can eradicate any disease that we get at as we went after foot-and-mouth disease. There was not any question about



1, Dr. W. W. Talbot; 2, Dr. A. H. Baker.

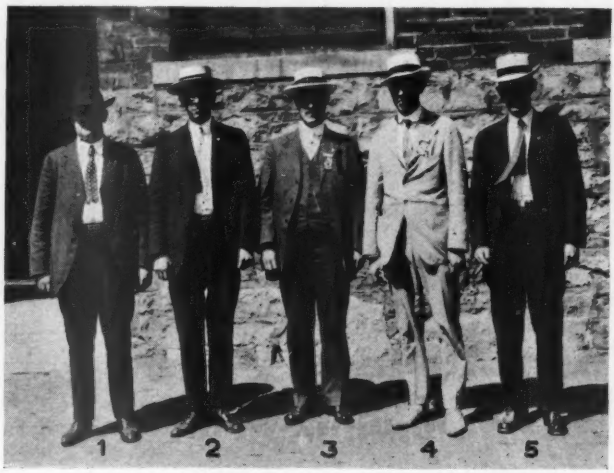
proper quarantine, or at least the question of quarantine did not prevail. We had a bill passed in the Iowa legislature two years ago which told us how to quarantine against foot-and-mouth disease, but it met with defeat at the governor's desk. The same influences tried it on again last winter, but they could not get an audience. It would not work at all, because the matter had been properly aired in the meantime. We can eradicate tuberculosis, and in Iowa we are going to do the best we can. Our funds are so limited that we cannot make proper progress. The Hereford breeders of Iowa were willing a year ago to begin to place their herds on the accredited list, but we did not have sufficient funds to send men out to make the test. We are going to commence the work this year, however, and I am going to invite Dr. Kiernan to come to Iowa and join hands in beginning the accredited herd system. I believe we can eradicate tuberculosis.

DR. J. F. WINCHESTER: There is one subject that has been pretty close to my heart for quite a long time, and that subject is tuberculosis. As most of you know, it was as it turned out my good fortune to schedule this disease as being possible of communication to man from the products of tuberculous animals. I got to be a common and public nuisance in that matter, still I rather enjoyed the controversy, and I am in a little controversy at the present time, which has brought this thing to the surface. I think it is impossible with a microscopic examination to tell whether the diseased lymphatic glands that are found in an animal after a tuberculin test has been positive, are due to tuberculosis or lymphosarcoma. Malignant cancer has been demonstrated by a histologist who is second to none in the United States. I want to draw this to the attention of this association. With all the work that has been done, if more histological work was done on this lmphatic system in these cows that present no lesions of a nature such as the eye can determine, what would be the percentage of lymphosarcoma or malignant cancer?

DR. O. H. ELIASON: I am interested in tuberculosis eradication. We believe in Wisconsin that tuberculosis can be eradicated, but I think we have erred in thinking of eradicating it by the same plan that we would eradicate highly contagious diseases. I mean this, that when we start in on the eradication of tuberculosis we should make up our minds that this is no twenty-four-hour job, that it is a long continued fight, which must be undertaken only in coöperation with the owner. If the herd is infected, it must necessarily extend over a period of years. We know that it is a physical impossibility to remove all the reactors even from one state, and I daresay that in some of the dairy sections the removal of the reactors from one county would be a hardship not only on the people of that county, but on the state at large. I believe if we had commenced fifteen or twenty years ago, when we started the tuberculin testing, to quarantine reactors and let them work their way out on a quarantine basis, we would now have been on a fair way to having eradicated tuberculosis from considerable territory. I tell you, gentlemen, there is more to the elimination of reactors than the money consideration alone. There is a sentimental attachment between a herd and the owner. We gentlemen who are not the owners of herds may not appreciate that, but we should consider it when we go out to eliminate any disease. We know that tuberculosis is a quarantineable disease. It does not jump over two fences, and, therefore, I believe we should adopt some system in eradication which will be more easy of application than the slaughter method. I speak of those reactors which are in evident physical health, and not the advanced cases. The subject of pure-bred herds or the accredited herds is a subject in which we are also interested. I wish to call your attention to the fact that in Wisconsin there are over 4,000 owners of pure-bred herds. We have shipped out of the state at least 35,000 head of dairy cattle during the past year—25,000 of this number were grades. If you think that the grade herd has nothing to do with the spread of tuberculosis, just consider that figure. These cattle went into all but three states of the Union.

We have commenced the eradication by limited areas. We have appropriated a small amount, which will be the beginning of testing out by counties. It has been our idea to use for the official test the intradermal method, believing that to be the best to use where we must cover a considerable area where there exist many cattle. The cattle population of a single county is in our state generally 70,000 to 180,000. The subject of testing pure-bred herds and who should test them is also a vital question. Should the testing of accredited herds be done by state and federal employees alone and taken out of the hands of the local practitioner, or shall we submit it to the profession at large? Shall we consider accredited herds only those which are tested by state or federal employees alone or shall we also consider those tested by practitioners?

DR. J. TRAUM: I am afraid that Dr. Turner has drawn some rather hasty conclusions from the small amount of evidence at hand. If we had a great amount of material we would have accomplished something. This material is exceedingly interesting, but Dr. Turner seems to have drawn conclusions which were not justified by the charts he had. He concluded that the subcutaneous is more reliable than any other test. His charts showed the sensitized subcutaneous test to be more reliable. The fact that he got so many more reactors after sensitization shows that the original subcutaneous, as it is practiced now, is an exceedingly poor test. His table shows the sensitized tuberculin test deserves a great deal of consideration. He concluded that the subcutaneous is better than the intradermal, and he showed twenty-five animals reacting to the intradermal and twenty-six to the subcutaneous. I am afraid he was not justified in drawing such conclusions from the material presented. It may be of interest to you to know that sensitized intradermal testing has been very extensively used. It gives very good results. I am a little strong for the intradermal test. I see its good points, and I fail to see its bad points, but one thing about the intradermal that some people fail to see is that with the intradermal injection one gets a thermic reaction just as frequently as with the subcutaneous. That is, there is a thermic reaction *plus* a local reaction which is well defined.



1, Dr. C. O. Kroener; 2, Dr. R. F. Bourne; 3, Dr. A. D. Knowles; 4, Dr. L. W. Goss; 5, Dr. I. E. Newsom.

Vesicular Stomatitis.

Dr. J. R. Mohler, of the Bureau of Animal Industry, stated that at the time he was asked to prepare this paper on vesicular stomatitis the bureau was working on the disease and he had hopes of making a discovery that would be of interest to practitioners. However, the more they worked the less they seemed to find and the quicker the virus seemed to become attenuated. In three or four months the virus became so attenuated that it failed to be transmissible. At the same time the disease in the field disappeared and they did not have an opportunity to pursue their experiments any further. Dr. Mohler advised that his paper, therefore, was in the nature of a preliminary report rather than an exhaustive study of the disease.

Besides vesicular stomatitis, other important forms of stomatitis were enumerated, mycotic stomatitis from fungi in feed, necrotic stomatitis caused by the necrosis bacillus, pustular stomatitis, which is less contagious and is confined to horses. The name, vesicular stomatitis, indicates not only the location of the lesions, in the mouth, but also suggests that the vesicles or blisters are characteristic features. The infection is known in Europe and South Africa and has been observed occasionally in the United States, but without attracting any particular attention.

During 1916 it became very extensive in certain sections of this country, especially Nebraska, South Dakota, Colorado and Wyoming. It was first reported in the Central West in army horses purchased for the French and English army. The disease found ideal conditions for spread among these animals at the remount stations. Thus it

was distributed through the eastern markets as far as the Atlantic coast. Several shipments of horses were made abroad, and infected American horses were found after arrival in France. The first information of the disease was reported in an article by the French veterinarian, Jacquele. Owing to the delay in the delivery of European periodicals, this was not received by the bureau until several months later. The French writer indicated that some of the veterinarians coming to the depot were acquainted with the disease, calling it vesicular stomatitis. The question of etiology was referred to the Pasteur Institute, but at that time attempts to carry the disease from horse to horse were unsuccessful. The opinion was given that infected feed was responsible. Later veterinary writers in French publications reported having observed the disease in American animals and believed the cause to be contagion. A cow had been observed to be similarly affected. Finally the disease was proved to be contagious and transmissible through direct inoculation. More recently it was reported that the malady had gained considerable ground in France. It had been observed only occasionally before the war and was attributed to the importation of American horses.

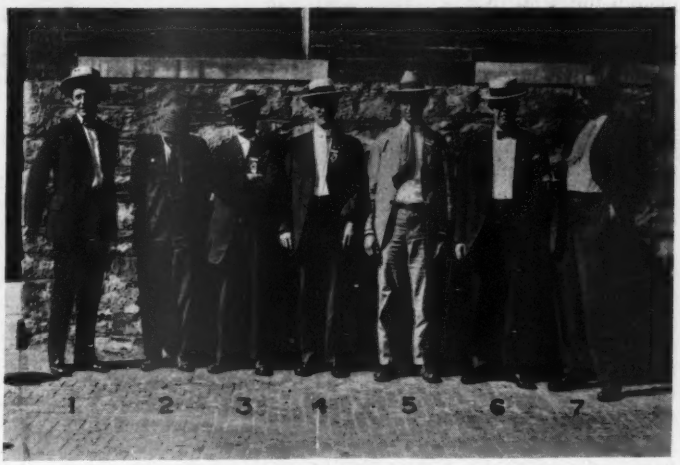
The disease may spread to cattle under proper conditions, but thus far it has not been observed under natural conditions among hogs and sheep. The conditions for its spread from horses to cattle obtained in Nebraska, as a shipment of cattle to the stock yards last fall was found infected. The disease was quite suggestive of foot-and-mouth disease, but a number of experiments showed it to be vesicular stomatitis.

Literature fails to incriminate definitely any specific organism causing the disease, and laboratory tests have so far been without definite results.

The first symptom of the affection is the formation of reddened patches on the buccal mucosa, especially the tongue. These patches are succeeded by vesicles or blisters of red color, only slightly elevated, having the diameter of a dime to that of a silver dollar and filled with a clear or yellow fluid. These blisters frequently coalesce to form a large vesicle. They usually rupture, which accounts for their not being recognized even in the early stages of the disease. These erosions may become confluent, varying in size from that of a dime to the palm of the hand, and may involve the entire upper surface of the tongue in horses. Healing varies, but usually occurs in eight to ten days in uncomplicated cases. The lesions are confined principally to the upper surface of the mouth, but may involve the lips and corners of the mouth. The lips are often swollen and raw. In a few cases fresh cows have shown a similar affection on the teats, but no foot lesions have been observed. With the appearance of the vesicles there is present a marked rise of temperature, which rapidly subsides. There is a profuse flow of saliva having the nature of a thin, stringy fluid. Frequently the presence of salivation is the first indication that the animal is sick. There is loss of appetite and inability to eat. Gritting of the teeth is frequent in horses, while in cattle smacking noises are heard as in foot-and-mouth disease. In dairy cows there is reduction in the flow of milk. The period of incubation is from thirty-nine hours to nine days, but the greatest number have occurred in two to five days after the exposure. There have been no losses from uncomplicated cases of this disease in either horses, mules or cattle. A certain proportion became affected with influenza, contagious pneumonia or probably both, and a number of deaths occurred.

That the malady is contagious was shown by the transmission of the disease from sick to healthy animals by inoculation. The degree of infectiousness varies. Some writers claim it is not contagious. The experiments of the Bureau of Animal Industry show that frequently one or more of the animals inoculated will fail to develop the disease. It is necessary to use more than one animal if accurate information is to be obtained. The disease has

been found to be most virulent at the time the blisters rupture or shortly thereafter, but when the lesions are five or six days old the virus of the disease has practically disappeared. This may account for differing results in attempts to transmit the disease artificially. The virus is evidently of short life and is transmitted only by close contact. Several instances have been reported in which a line fence or corral has been sufficient to transmit the disease from the infected animals on one side to the healthy animals on the other. The disease is seldom communicated by owners or caretakers visiting other farms. It appears to be spread by recently infected animals through pails, troughs, harnesses, etc. Inoculations of guinea pigs, rats and mice have resulted negatively. In several tests the infection was transmitted to the feet of several cattle, and the virulent material also produced lesions in the mouth of one hog, in the feet of another and in the snout of the third. A number of hogs in contact with infected animals but receiving no artificial inoculation remained normal in all cases, while cattle exposed transmitted lesions of the mouth.



1, Dr. Geo. B. McKillip; 2, Dr. H. Preston Hoskins; 3, Dr. Hal C. Simpson; 4, Dr. A. D. Knowles; 6, Dr. Armour, Goshen, Ind.; 7, Dr. W. B. Craig.

Very little work on the question of immunity has been done. Immunity was produced for at least three months. Injections of blood from immune animals produced no resistance to the disease. Whether mik is infectious to human beings has not been recorded, but it was fed to hogs without any bad results.

The disease is contagious and causes alarm because of its resemblance to foot-and-mouth disease. It may be readily confounded with foot-and-mouth disease. Differentiation is accompanied by numerous difficulties. Local quarantines are urged to prevent its spread. All owners of mules, horses and cattle, liverymen, stock yards and stockmen should separate the sick from the well animals.

The opinion that the malady is not foot-and-mouth disease is based on the fact that persistent observation of sick animals has failed to reveal certain symptoms. While the vesicles and erosions are similar, in none of the animals examined has there been found any soreness of the feet. Moreover, many horses have this particular ailment, but horses have not been observed to contract foot-and-mouth disease. Hundreds of hogs exposed to the disease have shown no signs of the malady, which is significant, because in the last outbreak of foot-and-mouth disease hogs were as susceptible as cattle. Exposed sheep also failed to show infections from vesicular stomatitis. In a number of cases the lesions appear to be continuous or progressive and not explosive as in foot-and-mouth disease. Complications are extremely rare in vesicular stomatitis. Sucking

calves are seldom affected. The vesicles of foot-and-mouth disease are larger than in vesicular stomatitis and are more tightly filled with serous fluid. Instead of increasing in virulence, vesicular stomatitis becomes decreased in virulence. The percentage of animals affected and the history of exposure would indicate that this ailment is not the highly contagious foot-and-mouth disease, which if introduced into a herd affects practically 100 per cent of the cattle and hogs on the farm. The necessity of inoculating horses with suspected material in any future outbreak resembling foot-and-mouth disease is suggested. In vesicular stomatitis we have a disease more resembling foot-and-mouth disease than mycotic or necrotic stomatitis, and Hutyra and Marek are correct in saying that determination can be made only after careful inoculation experiments after several days.

Mycotic stomatitis may be distinguished in that it occurs only in ten to fifty per cent of the animals in a herd and not in horses.

Necrotic stomatitis is distinguished because while it affects cattle it may also involve pigs and sheep, but its spread among the herd shows a much greater degree of infectiousness than vesicular stomatitis. In necrotic stomatitis blisters are never formed, but destruction of tissue occurs from the beginning. The cause is the Bacillus necrophorus.

In horses vesicular stomatitis may be distinguished from contagious pustular stomatitis, as in the latter disease there are nodules in the mouth, causing the surfaces to slough, resulting in pustules or ulcers. The location of the pustules are usually on the cheeks.

The treatment of vesicular stomatitis consists in removing the affected from the healthy animals and isolating them until fully recovered. Rigid sanitary precautions will greatly reduce its prevalence. One-half tablespoonful of borax should be placed on the tongue or the mouth syringed with permanganate of potassium; otherwise two tablespoonfuls of borax and permanganate should be placed in the drinking water and the animal allowed to drink or rinse its mouth. No feed should be allowed for the first few days, and afterwards the animal may be given bran and soft feed.

DISCUSSION

DR. C. G. LAMB: In the discussion of any subject it is presumed that the one discussing it has some special or peculiar knowledge of the subject. I do not have any special knowledge on this subject. We have heard it presented in a very masterful way, and the paper seems to include about all that we know about the disease. But as my state has been blessed or otherwise with several outbreaks of the disease, it might be of interest to recount some of my experiences in the field with this affection. Vesicular stomatitis made its first appearance in Colorado in a shipment of horses from the Omaha yards arriving in Denver, August 24, 1916. The affected animals were isolated and treated, the stables disinfected, and very few horses contracted the disease from this particular exposure, but on the 23rd of September, in company with Dr. W. E. Howe, government inspector in charge in Colorado, together with two of his inspectors, one of whom had had experience with foot-and-mouth disease in 1914, I visited the western portion of San Luis Valley. At one range we found one cow affected, and apparently the only one affected, although in the field with about fifteen head. This case assumed the necrotic form. On another farm a man had two horses affected and he had lost two horses, probably from starvation, due to inability to eat, on account of the condition of the mouth. Several swine on this place were observed without any evidence of the disease. On another range several cows were affected on the teats with a thick, hard black scab. On another farm a considerable number of calves were affected with what appeared to be typical symptoms of foot-and-mouth disease, exhibiting smacking of the lips and drooling of saliva, but no foot lesions. On this place there were also several horses affected. In a logging camp in the hills practically every horse was affected. In no instance did I find vesicles, although I saw these cases when they were evidently just coming down with the disease. The mucous membrane of the tongue appeared as though parboiled, and on slight pressure peeled off quite like a banana peeling. In none of these cases could connection be traced to horses in the Denver yards. The first appearance of the disease was on August 24th, and one month later I made

this visit 400 miles from Denver, and in no possible way could any connection be traced between the outbreaks. About this same time Dr. Schumacher, government inspector in the southwestern corner of Colorado, reported an outbreak of a similar character in a dairy herd. These ranges were widely separated, and all a long distance from the logging camp where the horses were stabled. These horses were not on pasture, and hence no means for the infection to be transmitted from one herd to another could be traced. Besides the animals on the different places seemed to be infected at about the same time. On October 12th the disease again made its appearance at the Denver yards in a shipment from Grand Island, Nebraska. This spread to a larger number of horses than the previous outbreak. During the next few months it became quite prevalent in various portions of the state, being disseminated mostly among horses. There were comparatively few instances of the disease being spread by cattle, although in some instances it was impossible to determine the source of the infection. The disease ran a course of three or four weeks. No treatment was attempted with any animals, except with broken horses. This consisted of washing the mouth with mild antiseptic solutions. Very few deaths occurred, and those were in old, debilitated animals. The chief loss was from the loss in flesh during the progress of the disease. The rapidity of recovery was remarkable. A few cases developed the necrotic form, and were much more resistant to treatment. The only animals contracting the disease were horses and cattle. Swine exposed were not affected. One point of difference between this affection and foot-and-mouth disease in my experience was that there were no foot lesions, but the distinguishing difference is the class of animals affected. Foot-and-mouth disease is said to affect the cloven-hoofed animals and no others. What the man in the field needs is a method of differentiation betwen this disease and foot-and-mouth disease without the delay of inoculation or the subjection of various animals to exposure.

1, Dr. J. B. Smith; 2, Dr. J. F. De Vine; 3, Dr. A. Eichhorn; 4, Dr. L. A. Merillat; 5, Dr. N. Rectenwald.

Dr. A. W. French: You have heard the paper read and discussed, and from what we all know or learn of vesicular stomatitis, it runs about the same course in all communities. I think Wyoming had its share of vesicular stomatitis the past winter. The first occurrence of it was some thirty days after they found it in Kansas City. If the genuine foot-and-mouth disease should ever get into a state like Wyoming, I feel there would be more trouble in controlling it than there was in all the twenty-two states where it appeared. We have 50,000 elk in the state of Wyoming, and if they are susceptible to it, I do not know what we could do except to get a gun and go hunting. In one county there was a round-up, and there were about 40 riders at this man's property riding for cattle. Almost every one of those riders carried the infection home with their horses, so we had practically a whole county infected to start in with. We commenced placing quarantines, and at first attempted to isolate the infected animals from the well ones and treat them, but in our state the herds run anywhere from a few hundred to a few thousand, and they are practically all wild animals, and I quickly learned that we had more than our hands full with trying to treat these animals. I quit ordering them to be isolated. Inside of a week the greater percentage of the infected animals had apparently recovered, and I do not believe it is the best policy to undertake to treat a herd of anywhere from three or four hundred to five thousand range cattle. One always finds them on the fight when he tries to do it, and our loss did not amount to anything at all from vesicular stom-

atitis. It had this effect that when later on we had a very hard winter, the after-effects of vesicular stomatitis, I am sure, caused us considerable loss from the weakened condition of the animals during the blizzards. Horses seemed to be affected a great deal more severely than cattle. In some cases I visited places the second time as long as ten weeks after the infection, and I found that the lesions were not all healed. In several bunches of cattle I found calves affected, and the disease killed some of the calves. As for taking them off hay and putting them on bran, I do not believe one of those range animals can be taught to eat bran. It would get well before it learned to eat bran. We quarantined horses and cattle both, and we did not allow a rider off that range, and we tried not to allow neighbors to bring horses to the place. In the dairy cow districts we attempted to treat these animals, and I believe it shortened the course of the disease. The disease swooped down on us there before we knew what we were about, and it gradually disappeared and we were through with it. The longer the disease ran in our country the less virulent it was, and so far as the direct loss from the disease was concerned, I do not consider we had any. There is one question I should like to ask Dr. Mohler and that is, if an animal has had the disease is it liable to contract it again?

DR. MOHLER: We had only a few experiments of that kind, and the longest period it lasts is three months, and after that the virus had exhausted itself.

Studies of an Obscure Cattle Disease in Western Nevada

This paper had been prepared by Drs. Mack and Records of Reno, Nev., and had under consideration a disease occurring along the eastern base of the Sierra Nevada Mountains. The only reference to it in literature was said to be in a paper by K. F. Meyer read at the Oakland meeting of the association i 1915. The disease had been classed as anthrax. Twelve cases of the disease came to the attention of the writers and in none of these could anthrax be demonstrated. The mortality was stated to be over ninety per cent among the infected animals. A tentative diagnosis of hemorrhagic septicemia was made and while the symptoms and lesions greatly simulated that disease, the conclusion was reached that it could not be definitely identified as that malady. Vaccination experiments with as many strains of Bacterium bovisepticus as available seemed to lessen considerably the number of cases. Thus while the bacteriological and serological findings seemed to be against the theory of hemorrhagic septicemia, serum therapy and bacteriology seemed to favor it.

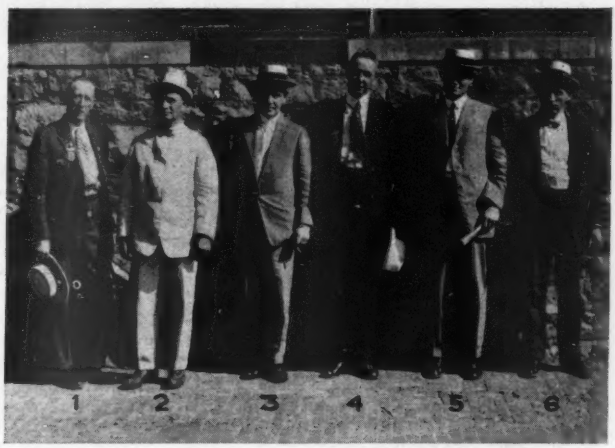
DISCUSSION

DR. A. W. FRENCH: I am not prepared to discuss this paper; I can only say that the doctor is happy in his selection of the title—an obscure cattle disease. He stated that his conclusion regarding some of his experiments seemed to disprove the theory of hemorrhagic septicemia, but just listening to his description of the symptoms and the course of the disease, I should be inclined to believe it was hemorrhagic septicemia, although his experiments may have disproved that.

DR. SIMMS: I think we have had this same trouble in Oregon. We have lost a great many animals in that state. We have done very little laboratory work on it. We made bacteriological examinations of only three animals, one sheep and two cattle, and in two out of these three we isolated the bi-polar organism which we thought was the bovisepticus. We prepared a bacterin which we have used in the state for three years. There have been a good many thousand vaccinated, and in almost all instances reports have been favorable. We have attempted to leave check animals in herds where possible, although most owners object so strenuously to that that we have not been able to leave checks. Out of thirty vaccinated we had one death and out of fifteen checks we had ten deaths. The vaccine we had had prepared at the college has been prepared from some four or five different strains of the organism, probably two isolated in Pennsylvania, one obtained from the Bureau and a couple isolated in our state. Dr. Hardenburgh, I think, wrote up the preparation of the vaccine some two or three years ago. We have been very well satisfied with the clinical results from the vaccine. Whether the bovisepticus is causing the disease in all instances we do not attempt to say, although the method we have applied seems to give results.

DR. C. M. HARING: I was very much surprised that my colleagues in Reno did not know of the existence of this disease except on the eastern slope of the Sierra, as the state veterinarian of California has been working with the disease, and the occur-

rence of the so-called bloody murrain in its lesions is exactly similar to the excellent description given by the doctor. Dr. Records mentioned that the only literature was by Dr. Meyer. I should like to call attention to a paper by Dr. Neverson of California in 1916, in which he describes this disease, and with more professional courage than has been shown by Dr. Records or Dr. Mack, he named it hemorrhagic septicemia. The question whether he is right or not cannot be ascertained without further examination, but he has as much chance to be right as other writers who have described similar diseases and alleged them to be hemorrhagic septicemia. Attempts to prove the existence of the bacterium in this disease or even to isolate cultures of Bacterium bovisepticus from the lymph nodes have often failed. Dr. Records mentions five successful cultures out of 113 attempts. I believe Dr. Meyer has one culture out of 14 attempts. Dr. Simms' record seems to be somewhat better, two out of three attempts. We have made some attempts at Berkeley, but we have always failed. I should like to ask what they call the disease in Nevada. I saw a letter from a practitioner in Nevada describing this condition as red water. It seems very unfortunate if the term "red water" should come into local use because the disease has no similitude to red water as described in Washington and British Columbia.



1, Dr. N. J. Sheppard; 3, Dr. Hall; 4, Dr. N. S. Mayo; 5, Dr. Ray Birch; 6, Dr. J. T. Nattress.

DR. O. H. ELIASON: During the last few years I have had under my observation in the state of Wisconsin a disease of this description breaking out at various times. We have not made any attempt to isolate any cultures, but from the general earmarks, if one conducts autopsies enough, one will find the lesions of hemorrhagic septicemia. One may not find them in all cases. In fact, in a great many of them there is an absence of incriminating symptoms, but the treatment has been so successful with the vaccines of various preparations which have been issued both by the Bureau of Animal Industry and by private laboratories, that there can be no doubt but that this disease is hemorrhagic septicemia, and we have named it such in Wisconsin.

DR. C. P. FITCH: Just a word regarding my experience in New York state. There was a disease in the northern part of the state which caused a considerable loss of cattle during 1914. Numerous specimens were sent to the laboratory for diagnosis. No positive diagnosis could be made. The symptoms were very similar to those described by Dr. Records. In 1915 the same disease broke out, and I went to the northern part of the state to investigate. It was shown that this disease was hemorrhagic septicemia. I say this to show the extreme difficulty of making bacteriological diagnosis of hemorrhagic septicemia in many cases.

DR. JOHN R. MOHLER: I would suggest in future experiments that Dr. Mack and Dr. Records take the spleen of the diseased animals and make inoculations. It is very difficult to isolate the Bacterium bovisepticus. If they take the spleen of these animals dying of the disease and inoculate rabbits and depend upon the experimental animals to pick out the disease, they may get some results. Personally, I am of the opinion that the disease described is hemorrhagic septicemia.

DR. H. P. HOSKINS: A number of the speakers have referred to the difficulty of isolating the hemorrhagic septicemia organisms and it has been customary at times to fall back upon smears either from blood films or from tissues, and the pres-

ence of the bi-polar staining organisms would be taken as indicative of the hemorrhagic septicemia infection. In this connection I might say that during the past year I have had occasion to make comparisons of a large number of strains of supposedly hemorrhagic septicemia organisms, and two of these strains from widely separated parts of the country have turned out to be pure cultures of the colon bacillus. Under certain conditions the colon bacillus looks very much like hemorrhagic septicemia organisms in smears. Further than that, of course, there should not be any cause for anybody not to carry the cultures further to differentiate the organisms.

DR. RECORDS: In working with this group of organisms, both in cattle and in other animals, there seems to be a great variation in the use of bacteriological diagnosis. We had at our department a slide made directly from the tissues. I think it was the pleural exudate of a sheep, which was sent to us by Dr. Lytle of Oregon and probably represents some of the work which Dr. Simms has mentioned. That slide was very rich in typical, bi-polar organisms. We have never found anything that could be compared to that. Occasionally we found an odd individual or two of the bi-polar organisms in the smear. That goes to show the variation in the infection in cattle in different localities. In Nevada we have a great deal of fowl cholera, which is merely the chicken and turkey infection with this same kind of organisms. In the birds we get a frank reaction, the bird teeming with the organisms. Answering Dr. Haring's question, the name that the stock owners have arrived at of their own volition probably is bloody murrain. We do hear the term "red water" occasionally, but those in closest contact with the university have taken our tentative opinion and learned to pronounce the word "hemorrhagic septicemia." In reference to Dr. Mohler's suggestion of direct animal inoculation, that is one of the points that the brevity of this paper made us ignore, but we have done a series of 400 or 500 small animal inoculations directly from the tissues and generally a pretty full series of tissues where they were in good condition. We have never produced a positive infection in any of these rabbits from any of these tissues. The recoveries we have made as I have mentioned have been by planting small plaques of tissue cut from the liver and blown into bouillon and a series of these taken generally around the border of this infected area. Four of these have been successful. Direct inoculations have always been a failure.

Cleaning and Disinfection of Cars

Dr. S. P. Musselman, State Veterinarian of Kentucky, read a paper on this subject, stating that during the present necessity for conserving foodstuffs, it behooves each of us to use every possible means at our command to aid in the production and protection of livestock. During the foot-and-mouth disease outbreak the Bureau of Animal Industry issued regulations requiring the cleaning and disinfection of stock cars and several of the states issued similar regulations, and when the Bureau subsequently revoked its order, all of the states except Kentucky did likewise. This resulted in stock owners withholding their shipments from Kentucky and so that state also was finally compelled to rescind its regulations governing the cleaning of cars. The objection to cleaning the stock cars was, of course, due to the unreasonable charges made by the railroads. Dr. Musselman said that if the railroads had coöperated to the extent of making a reasonable charge, the regulations could have been made permanent. He further estimated that 1,075,000 cars of livestock were shipped annually between points in the United States, and that cars could be disinfected at $1.00 per car. The actual cost to the railroad for cleaning and disinfecting a car at that time was said to be about 45 cents per car. Now that the cost of labor and chemicals has been increased, the cost for cleaning and disinfection must necessarily be higher, but it was pointed out that it would not exceed 80 cents per car. Allowing the railroads a reasonable profit of about 35 cents per car, in addition to the saving they would make in obviating the hauling of tons and tons of manure in those cars, the cost to shippers would be $1,210,000 for disinfection and cleaning. The saving to the states from the prevention of the spread of infectious diseases on the other hand was figured at $4,800,000. The cleaning and disinfection work in 1915 was said in many instances to have been done inefficiently and at unnecessary expense to the railroads, a

case being cited where three men took all day to accomplish the disinfection and cleaning of four cars. If all states and the Bureau of Animal Industry would agree to require the disinfection and cleaning of all cars after unloading and before they were again used for the transportation of livestock, the speaker was sure that the railroads would cooperate and provide regular stations along their lines equipped with modern appliances and trained men where cars could be disinfected and cleaned in a short time and at very little cost. Both the livestock and railroad industry would profit by the increase in livestock and the increase in shipments.

DISCUSSION

DR. F. TORRANCE: It has always been surprising to us in Canada that the United States has not appeared to be aware of the vast importance of this subject of disinfection of livestock cars and yards. When foot-and-mouth disease broke out in the United States, we were informed that the Chicago stock yards were being cleaned and disinfected for the first time in forty years. That outbreak appeared to have for the first time required the disinfection of places which had never been disinfected before, and apparently conditions are at the present time slipping back into the old rut. In Canada we have been fully convinced of the value of this work for a great many years. My predecessor, Dr. J. G. Rutherford, introduced a system of cleaning and disinfection of cars and stock yards which has been in existence now for a great many years, and I do not think any one would like to go back to the old way. We have a staff that takes care of this work. At every distributing point on the railroads we have a paid inspector employed by the department to see that the cars are properly cleaned and disinfected, and when he is satisfied that this work is well done he nails on the door his certificate that the car has been properly disinfected. Shippers of livestock have a right to refuse a car which does not bear that card. The railroads have gotten into the habit of returning cars after they have been used to the cleaning station. When the car reaches the station the litter is removed, the car cleaned out, swept and washed out with hose and water. After washing the disinfecting takes place. The disinfectant is approved by the department, mixed under the supervision of the inspector and applied with a spray pump. We always insist upon the disinfectant being mixed with lime water. Not only is the lime a very good disinfectant in itself, but it enables the workman to see that every part of the car has been reached. If one travels in Canada one will see our stock cars whitewashed up to the middle. Our stockyards are also required to be cleaned and disinfected. They are obliged to whitewash them at least once a year and if necessary oftener, and we maintain such a strict supervision of them that they have to do it. We are convinced of the benefit of this system, but when the railroads a short time ago decided that it was time to make the shipper pay for this and applied to the livestock commission for permission to make a charge for cleaning these cars, the people objected to the amount asked for. The railroads wanted as much as the railroads in the United States charged, and our people would not stand for that, but made them cut it in half. The shipper is now paying for the cleaning and disinfecting of cars. He does not want to have it done away with. The loss from hog cholera in our country is very trivial, also from glanders, and we fancy our losses from both of these diseases have been reduced to a minimum as a consequence of this system of disinfection. This is a very important subject in livestock sanitation and its value to the country can hardly be overestimated.

DR. L. E. NORTHRUP: We are cleaning about 150 cars daily in Indiana at a cost of $180, both single and double-deck, charging $1.00 for single and $2.00 for double; the men having the contract are making money. However, the cost of this service depends largely upon whether the car is cleaned in the winter when there is a thick layer of manure on the floor of the car requiring two men about three hours to clean properly, or in the summer time when it takes about fifteen or twenty minutes for two good men. We keep in the Indianapolis yards two veterinarians and one layman. After the cars are cleaned and disinfected they are inspected and the clearance sheets signed by the inspectors. In regard to Kentucky going it alone, we have been at this work since 1913, not only in cleaning and disinfecting cars, but we now have a number of auto trucks, which are a great deal more dangerous than railroad cars. These trucks run through the public highways. We employ a man to see that they are disinfected as soon as unloaded. My impression is that the real objection to the cleaning and disinfection of cars is the fee. Who shall pay for this? Without a doubt, I believe this fee should be divided. However, the cleaning and disinfecting of cars will lengthen the life of the equipment and

the railroad company should pay for that, and in Indiana we found they were willing to pay for it. The Belt Railroad and the railroads of Indiana are losing some interstate business from Illinois and Ohio because of the $1.00 charge for a single deck car. The cleaning and disinfection of cars prolong the life of the cars and the railroad companies are willing to pay half on this cleaning. I can hardly see how Dr. Musselman gets his figures on the amount saved by cleaning and disinfecting cars. I believe the yards are very important. Stock bought at the yards are taken to farms where they spread infection, while cars never leave the track. I believe the yards are the more important.

DR. S. F. MUSSELMAN: The reason I did not discuss the cleaning and disinfection of yards was that it would be a departure from my subject, but it, of course, is of material importance and should be taken up later, since I am under the impression that the cleaning and disinfection of cars can be arrived at earlier than the forcible disinfection of stock yards. It at least is a subject of sufficient importance to have all sanitarians interested and state livestock sanitary boards adopt uniform regulations requiring all stock yards to be cleaned.

Some Studies in Forage Poisoning

This paper by Dr. Robert Graham of the University of Illinois, was illustrated with a number of stereopticon slides depicting results of experiments conducted in forage poisoning. He cited the theory of Dr. Leonard Pearson as to the analogy between forage poisoning in animals and meat poisoning in man and the fact that the Bacillus botulinus had been isolated from cases of the latter disease. While the causative factor of forage poisoning could not be definitely identified as the Bacillus botulinus, yet it was demonstrated that when this bacillus was fed to animals it produced symptoms and lesions similar to those of forage poisoning resulting in the death of the subjects. Furthermore, it was shown that a serum against the Bacillus botulinus was beneficial in typical cases of forage poisoning, experiments in administering the serum to several animals poisoned from forage resulting in the recovery of those so treated, while in practically every instance the control animals succumbed to the disease.

DISCUSSION

DR. A. EICHHORN: I think the subject of forage poisoning is one of the greatest importance and the work of Dr. Graham shows that a great step has been made towards clearing up this mysterious disease which has been known up to date as forage poisoning. As Dr. Graham's paper has pointed out, the work done by others has demonstrated that an organism isolated from this disease has been found to possess pathogenic properties, and furthermore, that the Bacillus botulinus has rapidly caused the death of horses when fed in small numbers, practically opens the way to the study of the relation of the Bacillus botulinus to forage poisoning. The work carried out by Dr. Shipley has been under my direction, and I followed it very carefully in the initial work. He studied the Bacillus botulinus not only in pure culture but also when mixed with various forages and then when fed to animals the symptoms and lesions which it produced. The findings at that time were those which Dr. Graham described in this paper. Small amounts of the culture when fed to animals produced a disease which very closely resembles forage poisoning. As he also pointed out excreta from chickens fed with this culture and the excreta in turn fed to horses had been able to produce symptoms of forage poisoning. The work has been followed and brought to a successful issue by Dr. Graham, and he went even further and demonstrated that the disease, which in all respects resembles forage poisoning, may be combated by serum treatment. As you all know the Bacillus botulinus is the sausage or meat poisoning organism, and a serum has been developed and used with success on human beings affected with this meat poisoning. I think credit is due to Dr. Graham for further developing these experiments and the prophylactic treatment of forage poisoning. While he demonstrated all of this experimentally, it will be of interest in the future to continue this work in actual outbreaks in the field. We shall thus be able to demonstrate whether or not in all cases we have to deal with the B. botulinus.

DR. SIMMS: This work by Dr. Graham is indeed interesting and shows quite successfully that the forage poisoning he came in contact with in Kentucky was probably caused by the Bacillus botulinus. As I have observed forage poisoning, there are apparently different forms of this disease. During this horse plague in western Kansas and in Nebraska, there seems to have been more or less characteristic lesions in the brains of horses. I did not get the symptoms as shown in this disease in Kentucky, but in Kansas and Nebraska the symptoms were quite characteristic with a rise in temperature before the

symptoms developed, then a drop in the temperature and increasing pulse; also on examination of the brains we found certain cellular infiltration which seemed to be quite characteristic of the disease. But there seems to be a difference because we were unable to find intracellular bodies there. Also on sending some of this material to West he reported he could not find them and that it was a different disease. Another instance, we have had this forage poisoning occurring where horses are allowed to eat quantities of moldy corn, and that moldy corn in all instances is associated with the corn ear worm, and in these cases we find large softened areas within the brain, the softened areas nearly always appearing in the cerebrum, on either side or on both sides. These cases are quite typical and we know that the losses are very high indeed. The losses are particularly high in localities where we have had a bad infestation with the corn ear worm. Then there is a form of this disease where the fatality was quite high and the symptoms took on the appearance of those described by Dr. Graham, but in the examination of the brains of these animals, I could not find any pathological changes. Then in another instance, these animals did not show any increase of temperature. They had paralysis and the tongue would hang out. Then there was another outbreak that I ran across in which the animals showed symptoms more or less characteristic of influenza, and they had been diagnosed as influenza. They were eating fodder that was exceedingly moldy. In these cases the temperature was high at first and continued high, around 106° F., heart beat exceedingly rapid and very weak, almost imperceptible, and nearly all these animals died within forty-eight hours. Unfortunately I did not get to make a post mortem examination of any of them. The hay they were fed was alfalfa, which looked quite good, but it had a peculiar odor, a sort of tobacco odor. One man lost about six out of eight or ten affected. We took some of the hay to the laboratory and fed part of it to guinea pigs and six out of eight died. Further work was done to isolate the organism but without success. There is a possibility there of anerobic organisms, which we did not try to isolate. But I think there are four different forms of disease to all appearances caused by feeding forage. This work that has been done will encourage further work in isolating anerobes. I sometimes think we do not do enough toward the isolation of such organisms.

DR. A. H. BAKER: As I see things as a practitioner, I think forage poisoning is one of the most important diseases we meet. It was at my suggestion that the scientists at the Illinois State University be called in on the case of this kind at Ottawa mentioned by Dr. Graham. I recognized when I was called there in consultation by a local practitioner that we had conditions of forage poisoning. Before I arrived five or six horses had become affected and they all died with the symptoms Dr. Graham described. The first symptom was frontal paralysis, and all the conditions including the recumbent position and death in forty-eight hours occurred. We found by investigation that the owner had just started in to feed silage and the upper layer, about a foot thick, was moldy. He knew it was not fit for feed, and he bedded his horses with it; to his surprise the horses ate this bedding of moldy silage, and in the course of twenty-four to forty-eight hours they developed these symptoms and died. On investigation by the state university, they bought some old horses and fed this same silage to them, and they died. They concluded that the moldy silage was the cause of the forage poisoning. In this connection we know that some molds are harmless and some molds are very poisonous, fatally so. I should like to suggest to Dr. Graham, now that he has started on this forage poisoning problem, that he give us the result of a little further investigation and enable us to differentiate between the poisonous and the non-poisonous molds that exist in forage.

DR. GRAHAM: Regarding the work at Ottawa, Illinois, I should like to say that last summer I believe they brought some plug horses and proved that the ensilage contained the causative factor of the disease. At ensilage time they place an oilcloth over the old silage. They purchased 18 horses and placed them on the silage. Thirteen of these horses received serum and five of them were left as controls. Different serums were used, all of the Bacillus botulinus but different strains. Thirteen horses received these varieties of serum. The five control animals died and one of the serum treated animals died of peritonitis. The other twelve head of horses continued to eat the silage for about thirty days. In connection with Dr. Simms' statement regarding the gross lesions in the brain, it happened that one of these horses showed large softened areas of the brain. The temperature of these animals was not above normal. We have taken the temperature of at least seventy-five, and we have not been able to observe the rise described by some in connection with this disease. With reference to the molds, while there are a great many reports regarding the toxicity of molds, we have not been able to find a mold that would produce death even in very large quantities. In fact, I am not so certain that molds are connected with forage poisoning as the causative factors. There is probably a connection with molds, but I believe it is a symbiotic relation.

Regulation of the Production and Sale of Biological Products by the Bureau of Animal Industry

Dr. J. R. Mohler, Dr. A. R. Ward and Dr. Shore had prepared this paper, which was read by Dr. Ward and dealt with the regulatory work of the Bureau of Animal Industry with reference to the sale and manufacture of biologics. It was stated that the marketing of these products had expanded greatly since the inception of the regulatory work in 1913. While the number of concerns manufacturing hog cholera products seemed to have remained stationary, there has been a remarkable extension of the variety of other biological products. There were 112 products other than those for hog cholera in 1914, but the number of miscellaneous products has more than doubled since that time. There are now 142 bacterial vaccines on the market. The paper gave a detailed review of the various provisions included in the department's regulations. License for manufacture of products is given by the Bureau only after inspectoon of the establishment and its methods of manufacture. Biologics may be classified into two general divisions—products whose reliability has been established, such as tuberculin, hog cholera serum and anthrax serum, and products while tried whose reliability cannot be relied upon, such as those for the treatment of diseases like shipping fever, canine distemper, abortion, etc. In those of the former class, it has been demonstrated beyond all question that when properly prepared and administered, these products will accomplish that for which they are intended. Preparations of the latter class while worth trying have not shown that administration will be followed with good results with the same regularity, and in their advertising the manufacturers should be conservative concerning the results following their use.

The method of labelling is considered important in connection with establishing the identity and age of the products. The label is required to bear the true name and the official license number given to the establishment, also the serial number which identifies the product in accordance with the process of manufacture. The label should be attached to the true container and not the carton in order to keep it from getting lost.

The Bureau requires all products to be sterile. Contamination is the great obstacle encountered by the commercial bacteriologist. One with only a smattering of bacteriology knows little of the difficulties. It is one thing to cultivate bacteria in test tubes and keep the test tubes pure, but another thing to cultivate bacteria in commercial quantities and keep them sterile. The Bureau requires samples to be submitted of the cultures made. Records should be kept in the manufacture so that responsibility may be fixed in the case of errors. Samples are also bought from time to time by the Bureau in the open market. These furnish valuable information concerning the labelling, etc.

Anti-hog cholera serum is more extensively manufactured than any other product coming within the scope of the regulations. Conditions in the production of this serum were far from satisfactory some years ago, but a great change for the better has taken place since then with improvement in the plants and equipment as well as improvement in the products. These have been brought about gradually by raising the standard of requirements rather than by any precipitate change.

The activity of the Bureau is not to be measured by the number of licenses suspended or revoked. Conditions in the various plants are improved and remedied for the most part by the personal visits of representatives and by correspondence.

Still greater improvements in the general quality of products are looked for by the department. It is apparent that great good will be accomplished in serving the livestock interests if only pure and potent products are placed on the market. The inspection maintained by the federal government, however, is supervisory, and it is not possible for the government to endorse or guarantee the products prepared under license.

DISCUSSION

DR. JOHN REICHEL: The paper by Drs. Mohler, Ward and Shore offers in a broad sense very little material for discussion. A good many points have been brought up that stimulate thought, but in a broad sense, there is very little material there for discussion. I do, however, want to comment on some of the thoughts that came up. Since 1913 the regulatory service has begun to mean something. It has begun to mean something to the producer, and I think still more to the consumer. There are a lot of things in connection with that service that are very vital. I think that admission must be made at this time that there is a great deal of misunderstanding and a cloud over many things we are dabbling with. I doubt if many of us could get up and state clearly the difference between the numerous bacterial vaccines recommended, and to go further, I would say—the difference between the various blackleg products that are coming to the front. That brings with it a very strong plea that the names of products ought to be very clearly descriptive. I have in mind the term "polyvalent bacterin." In itself it does not mean anything except it is supposed to cover a multitude of sins. On the other hand we have such a term as "Bulgarian bacterin," and we know in some way it must be related to the organism, the Bulgarian bacillus—that is descriptive. Another thought—in regard to the return date or expiration date that every container of a biologic must bear, I think the statement was made by Dr. Ward that the product is expected to be efficient within that date. There is a slightly broader interpretation, I think, to be made in that connection. If we take a 500-unit tetanus antitoxin package, most manufacturers realizing this is the amount necessary to protect a horse for a given time, will make an allowance of time in filling up the container for that product. Or for example a product dated eighteen months from the time of filling will have 20 and 30 per cent extra unit strength included. Therefore, the man can rest assured that he is injecting 500 units within that date. Just how fast biological products deteriorate is, of course, unknown. There are certain lines of thought that have come up that are pretty well established. We know they do deteriorate very fast as they age. That has been demonstrated with tetanus antitoxin. The closest coöperation between the producer and those in authority should be necessary. The reason for this is that we need so much data on the various biological products. It is quite difficult to say how long 500 units of tetanus antitoxin will persist in an animal. We have there a difference in the horse. In the human being 500 units are likely to be eliminated in two or three weeks. It acts as a foreign serum in the human being, which is not the case when that product is used in the horse. There the elimination is very slow, and while in the man elimination is a matter of days, it is a matter of months in the horse. We think sometimes that we cannot do any more than has been done. I like to think back over the work that has been done in the standardization of meningococci serum. The meningococcus is now classified into four different groups as it affects human beings, and it has been found possible to work it out very accurately with the injection of mice. The same thing is rapidly coming to the front in antipneumonic serum. There is some promise that antistreptococcic serum can be more or less standardized in the same way. As for bacterial vaccines, the best that can be done is that the numerical strength ought to be within certain limits.

DR. FRANK BREED: I do not know that there is anything left for me to say. Of course, the standardized tetanus antitoxin has been in existence for some years, but take the standardization of streptococcus serum, and to my knowledge there is no means of absolute standardization; that is, we cannot say that a cubic centimeter contains so many immune bodies. There have been some results obtained by animal inoculation and testing against the virus, although I think the test used mostly is the complement fixation or the aggultionation test, which is not a specific test from the standpoint of establishing the number of immune units but a relative test. In the preparation of white scours serum it has to be tested against the various forms of organisms. It requires that this serum should be tested against each variety of organisms to know that the immune bodies are established for each. I do not think there is any question but that the biological products which are put on the market today are of better quality and that they are prepared under more sanitary conditions than they were before the Bureau undertook regulatory supervision. Regarding the dosage of bacterial vaccines, there are just as many different numbers of organisms per dose as there are different commercial houses. No two commercial houses give the same dosage in the products indicated for the same conditions, and if it could be handled in any way for experimental data to be obtained through the work of the Bureau so we could establish a certain dosage for certain bacterial vaccines, I think it would be a great help, not only to the commercial houses but also to the men using the product in the field. In anti-influenza bacterin, we find one house that will be giving possibly 50 million, possibly a billion, organisms per dose, and bacterins ranging from that up to 80 or

90 billion organisms. Some claim good results with low doses and some with high, but there ought to be a medium by which we would obtain absolutely the best results. Regarding the regulations of the Bureau that went into effect when I first entered the commercial line of work, the commercial houses did not exactly know how to take the proposition. Some thought it would be a fight between the Bureau and the commercial man, and others thought the Bureau would assist the laboratories in preparing better products, and it has been my experience that the Bureau has always been willing to assist the manufacturer in preparing a better and more reliable product.

DR. T. F. KREY: I think all manufacturers agree that government supervision is a good thing. There is one thing in regard to serums that might be mentioned and that is we do not always get the coöperation from the veterinarian that we should. I mean that some of them disregard instructions as to keeping it properly—keeping it in a cool place. I have seen serum kept right in the sunshine, and from that cause I believe poor results not infrequently occur. In regard to the potency test, I do not believe serums or antitoxins can be put to a severer test. That is part of my business. I take a product and place it under field conditions and with a large number of veterinarians who act as coworkers in order to establish new data regarding it. In regard to bacterial vaccines, Dr. Breed mentioned the number of organisms in packages put out by different manufacturers. I believe at the present time with our knowledge of bacterial vaccines that each case we treat, regardless of the number of organisms used, is an experimental case. I have seen in my own experience pretty good results from using a small dose, and on another horse presenting a similar clinical picture, I have had to use a very large dose to get results. I believe that will all work out in time, but I think the proper way to get at it is to relate more of our personal experiences with these products. As a matter of fact we rarely get any clinical data, any absolute records of cases, from veterinarians, and if we had more records of the treatment of cases with bacterial vaccines, I think we would arrive at a complete understanding in regard to it a great deal sooner, and then the strength of vaccines and the number of organisms would take care of themselves.

DR. FITCH: There is a point that has come up which perhaps may not properly belong to this discussion, but it is one very near my heart, and that is the terminology used in the discussion of these immunizing agents. Having dealt with students for the past ten years and practitioners especially in the field of immunity, a standard of terminology seems essential. The terminology of the word "vaccine" or the derivation refers primarily to the cow, and it seems to me "vaccine" should be limited to those agents which are attenuated viruses which will produce the disease in a mild form. The term "bacterin" should be adopted for a dead organism held in suspension, and the term "antitoxin" should be used to designate that product or serum of an animal which has been immunized to a specific toxin. The term "serum" should be limited to blood serum of the animal which has been immunized to the virus or cause of the disease.

DR. A. EICHHORN: I want to say a few words on the standardization of biologics for the control and prevention of animal diseases. A great deal has been said about it, and from my familiarity with this work, I can say from the inception of this Bureau work a great improvement has been accomplished up to date. However, I think those engaged in the preparation of biologic products can advance this work in the laboratory. It should be made plain that the enforcement of the control should be the same as in the use on human beings. I believe all products prepared for the treatment of animals should be of the same standard as those used for human beings.

PRESIDENT COTTON: We have heard the side of the commercial houses. I should like to say just a word from the standpoint of the practicing veterinarian. In the last couple of months I have been examining some of the candidates for the reserve army and asking about influenza and the treatment called for in acute cases along the line of biological products, I was told "bacterial vaccines" in practically fifty per cent of the answers. Why? Because such and such a biological house tells us to use it. Why these biological houses do not get good results is that they recommend to the practicing veterinarian to give these bacterial vaccines to an animal when it has an acute infection. I want to know where the indications are for these bacterial vaccines. Why should we fill the animal up with a lot of these dead bacteria? We are simply decreasing the resistance of the animal. Then they don't know why they don't get good work! We understand that the antitoxins are indicated, but why should we want to use these emulsions of dead bacteria in an animal that is all but overwhelmed by disease?

DR. REICHEL: The commercial house has a distinct duty that may be summed up in the word "service." It has been said here that it would be well to consider field reports. But I think that the reliable concern does not rest upon that information alone. The reliable concern knows that the average practitioner cannot keep up with theories and principles upon which most of this work is based. In

that connection, as I said before, the producer, the consumer and the regulatory service ought to work together. Field reports are of some value, but of very little value as a matter of fact. To come down to the point brought out by Dr. Cotton—is it of benefit to inject an animal having a disease with bacterial vaccines? I only want to bring up the work of Gay in California. There, for example, in dealing with typhoid fever of human beings, they make it a practice to inject large doses of typhoid bacteria. The principle is that injecting the organism subcutaneously they have a local reaction and the immunity resulting therefrom is of value against the general infection that exists. It may not be good practice in every case, but nevertheless good results can be, and have been obtained. I have seen in horses we purchased for our own work that bacterial vaccines have been of value in aborting shipping fever. It is difficult for us to keep abreast with all things. We must have faith in each other. It is a distinct duty of those who have an interest in this to go slowly and carefully. I do not think anyone is trying to put anything over on the practitioners.

DR. W. J. MARTIN: In observing biological preparations in the hands of the practitioners, I think this is an important point and one that is responsible for variation and conflict in the reports of men in the field using the products—we find these products probably in the bookcase and everywhere else in all kinds of temperatures. I think the manufacturers have been at fault and I think our government bureau has been at fault in not emphasizing the proper methods of preserving these intensely changeable biological products.

DR. J. F. DEVINE: My experience has been largely in accordance with what Dr. Cotton has said about using these bacterins, but there is a saying that none of us know about the use of these vaccines or bacterins in treating actually sick horses. By that I mean one can take perhaps thirty cases of influenza more or less complicated and inject according to instructions given by the biological house; and the strange part of it to me is that, while I agree with Dr. Cotton that I cannot see the value of bacterins unless administered in time to prevent the disease, nevertheless there is a lowering of temperature in many cases from their use. There are evidently some cases that would be benefited by this bacterin if we knew which cases they were, but there are certainly some in which it does no good and some in which it does harm.

DR. J. W. CONNAWAY: I think some of these difficulties which have been recited by Brother Cotton and our friend DeVine and in the matter of the purity and potency of these products could be solved by taking the manufacture of these things out of the commercial field and put it into the government's hands. I believe that the practitioners of the country would be glad to see that done in order that they might put upon the man who made the product the responsibility for its potency. Dr. Ward said that the government did not undertake to guarantee the potency of these products. That, of course, might be difficult even if they had the manufacture of these products under their own control rather than under their inspection because we cannot control all of the field conditions. Sometimes a practitioner who uses what looks to be an absolutely good anti-hog-cholera serum made under government inspection may have for quite a while excellent results, but using that same serum he may have at certain times very bad results. The fault is not with the practitioner; the fault may not be with the serum, nor with the manufacturer of it. It may be the fault of field conditions. Busy practitioners are not always able to determine what those conditions are. I am not so afraid of paternalism as some people are. The Bureau of Animal Industry at the present time is manufacturing blackleg vaccine and distributing it all over the country free of charge. I wish it were possible that the Bureau could make all of these products and furnish them free along with good inspection and we would ultimately eradicate some of these diseases that ought to be eradicated. I believe that time is coming. This great war is making us tolerant of a good deal of paternalism, and I believe the time is coming when a larger control of these things that are made for the eradication of diseases will be lodged in official hands and they will be taken out of the field of commercialism. I believe the busy practitioner who uses these products and has not the time to be trying out vaccines from various concerns, being obliged to depend sometimes upon a misleading label on the bottle or the lack of instructions from the men who are making these things, will then be provided with reliable products and definite instructions regarding their use, and we will do greater work as a veterinary body than we have in the past.

DR. COTTON: I feel that this has drifted away a little from my thought, and I want to put myself right. I do not want to condemn the biological or commercial houses, because I think they are doing a grand work. I have had wonderful success with some biologic products, but to inject this bacterial vaccine into an animal suffering from an acute infection seems erroneous. I do not want to see this discussion drift into a Socialist argument. I do not think the government should supply us with our remedial sugar, coffee or other products. I think, however, that the biological houses should be more careful in telling the practitioner where to use these biologics.

DR. A. R. WARD: It is pretty difficult to sum up the remarks that have been made. Regarding the bacterial count, for a year in my travels back and forth I have heard of various manufacturers labelling the dosage or bacteria high and have been asked what we will do about it. I have said if any one will tell us how to do it we will do it. That is to say, we cannot go on the open market, buy a bottle of bacterial vaccine labelled ten billion, take it back to our laboratory, count it and say to the producer, "You are a liar—there are not ten billion in it." If we said that, he would say, "Don't you know that bacteria dissolve in a solution of this kind and you cannot find the bacteria there?" which is the truth. Until the Bureau could have a man present when these products are manufactured and count the bacteria, I don't see how this count could be made. I went to a very high authority on medical products and he said, "We are not doing anything and cannot do anything regarding the dosage." He said that typhoid vaccine has the best reputation among medical products, but the dosage used is merely a guess. One thing that strikes me when a practitioner out in the field encounters a given condition and uses a bacterin for it, in ninety-nine cases out of a hundred he makes a guess as to the etiology; then he buys a package of bacterins and goes ahead and expects to get results. It seems to me the necessity for an accurate bacteriological diagnosis in a lot of these cases is important. Much has been said about the practitioners' results. The practitioners are the men who make a market for a lot of these things, but the conditions under which they work make it pretty difficult for them to control their experiments as scientific experiments are controlled. The conditions under which practitioners are working seem to me to be such that it is very difficult to get accurate data.

Studies in Blackleg Immunization

Dr. Adolph Eichhorn, in a paper on this subject, dealt exhaustively with the development and technic of the production of products for immunization against blackleg, recounting the history of this work since the discovery of the nature of blackleg in 1887. Up to the present time, according to the essayist, the various products devised to combat the disease have without doubt reduced the losses from the malady, but nevertheless they have not been perfected to a degree to place them as a safe and effective procedure. The most common method has consisted in the injection of attenuated virus prepared in either pellet or powder form. While reports prove the value of this product as an immunizing agent, yet the results are not uniformly satisfactory as direct losses from the vaccine are known to occur and insufficient protection from the vaccine is an all too common occurrence. The product is comparatively crude and cannot be accurately standardized. A single dose may sometimes contain 100,000 to a million spores and at other times a much smaller number if any at all. The amount and activity of the virus it contains cannot be established. Furthermore, attenuation may injure or destroy the individual spores thus inhibiting immunity, which is produced only if the spores are actually able to germinate in the animal.

A further preparation of vaccine has been made from blackleg meat or juices, consisting of an emulsion made from them. The trouble with this form is the difficulty of making it homogeneous, and if the vaccine contains clumps which have not been properly broken up, the results are different than when a homogeneous emulsion is employed.

Attenuated cultures in which the organisms have been attenuated in several ways, have also been employed, but the results have not been uniform.

Leclainche and Vallée developed a liquid backleg vaccine which they tested out extensively and which is being employed with good results. The shortcomings, however, are that it is subject to the same deficiencies as the Pasteur vaccine for anthrax. The keeping qualities are limited, and further the blackleg organisms do not retain a uniform virulence.

Different immune sera against the disease have been produced and have been shown to be of considerable value. The use of serum, however, has its limitations. It induces only a passive immunity, which protects the animal only for about one month. However, in herds where there has been considerable losses the animal might be treated with this serum to be followed by an active immunizing agent. As a cura-

tive treatment the serum has had beneficial effects.

More recently germ free extracts or aggressins have been recommended. The products are obtained from animals artificially infected and the fluids extracted by pressure. Results have been highly satisfactory and no doubt more reliable than with blackleg pellets or powder. The cost of production, however, is considerable and, therefore, the stock owner will not readily take advantage of this product.

Perhaps the latest preparation put out in this connection is blackleg filtrate. It is used almost exclusively for blackleg vaccination in Japan. It produces a uniform protection and the losses incident to vaccination are entirely avoided. The filtrate has been concentrated in order to facilitate its handling. Experiments have established that it possesses toxic properties similar to blackleg which will kill animals. The fact that it may be neutralized by the serum is a proof of its value as an immunizing agent. There is no product that will produce permanent immunity, but this filtrate confers active immunity for a considerable time, and since it does not contain the blackleg germ in any form, it cannot produce the disease. It will retain its potency for an almost indefinite period of time.

DISCUSSION

DR. L. W. GOSS: Dr. Eichhorn has covered this subject so thoroughly that I do not know that I can add a great deal to it. However, there are a few things I wish to bring to your attention, and that is regarding the old powder form of vaccine. We have done some work on this form of vaccine and in testing it out have not alone carried out the government test to know that it will not kill up to a certain strength, but we have added to that, another test to show at what strength it will kill. By so doing we show that we have a powder that has a virulence. This material is made and sold as a powder or perhaps as a pill. We know we have a powder which has virulent organisms and which will produce death in guinea pigs. It has been shown in many cases that it will not protect and, therefore, is not a very reliable substance. We have noticed many times records of people who have purchased the vaccine and injected it into cattle. These cattle would run along over a period of sixty to ninety days and then would begin to develop blackleg again. If we get the powder and pellet form of vaccine strong enough to produce a high degree of immunity, there is danger of its producing death in animals when inoculated. The serum seems to be of some efficiency in preventing blackleg. It has a highly protective property. We find that we can produce a serum that will protect guinea pigs against about 60 m. l. d. of blackleg virus. That is considerable protective property and is of value in checking outbreaks. It has been used on animals with the disease, but since blackleg is so acute, the serum has to be used early to be of value. It has been employed in herds to check blackleg when large numbers of cattle are dying. The immunity conferred is of a rather short duration, probably three to four weeks. By following the serum with pellets, produced by grinding diseased muscle, we get a degree of active immunity when used three days after the serum. However, out of a number of cases vaccinated there have been some losses reported, so it does not produce a high degree of immunity. We find that the germ free extract has high immunizing properties. We have used this material for about two years at the Kansas State Agricultural College and we must rely somewhat upon field tests for results. Out of 11,000 doses bought on the market and used among herds in the state, there has been only one loss reported following its administration. There *may* have been more losses than that, but when people buy a high priced product they are pretty apt to report bad results from it if such occur. From this it seems quite conclusive that this product has highly immunizing properties. As to the filtrate made from cultures which Dr. Eichhorn has produced, I am not in a position to state the results of experiments with that material as it has not been on the market very long, and we have not had sufficient time to complete our tests. We are making some tests of the material but at the present time I have no definite information.

Symposium on Animal Parasites

This session was devoted to papers and discussions of animal parasites. Dr. C. P. Fitch gave an illustrated lecture on parasites of horses; Dr. W. Lester Hollister presented a paper on parasites of swine, and Dr. A. D. Knowles read a treatise on parasites of sheep.

DISCUSSION

DR. MAURICE C. HALL: There is no other topic in veterinary medicine that I know of that could be handled by veterinarians in practice and at their scientific meetings with as little regard for thorough knowledge of the sub-

ject without the practitioner getting into trouble. If a practitioner or laboratory man came before this meeting and referred to bacilli as micrococci, you would hoot him, or at least I think you would. In practice you call every sort of a worm an Ascaris; you lump them together without regard to their effect upon the host or their life history. Parasitism is more important than most veterinarians think. There are any number of cases in your practice where there is no febrile condition, no clear clinical picture except an unthrifty animal. In the case of the young animal it fails in health rapidly and dies for the reason that it apparently cannot tolerate this injury to the digestive or respiratory system. But you do not recognize that afebrile condition as parasitism. You make any number of other diagnoses. The idea of making an examination of the feces and finding the parasite eggs is simple compared with a bacteriological examination. Yet you only guess at the cause and do not make any examination. The parasitic diseases are the most easily diagnosed of diseases, but you do not take the trouble to do it. The only idea I feel like contributing to this meeting is that veterinarians are ignorant of parasitology. The subject of life history is very important in parasitology. If you do not know the life history, you cannot employ proper prophylaxis. Another thing is the importance of manure disposal as a factor in controlling parasitic diseases. The parasites in the intestinal tract produce eggs which pass out in the manure. The eggs of parasites of the respiratory tract are coughed up and as the saliva is swallowed pass out with the manure. A great deal of work has been done by the Bureau of Animal Industry in this country on life histories of parasites, but you gentlemen do not know what good work has been done in this country because you pay so little attention to the subject. If the A. V. M. A. did as much work in this field as it should it would elect Dr. Ransom a member of this association and feel it was being honored when it did. I made an investigation for the Bureau of Animal Industry in 1913 looking up the distribution of some diseases, and it appeared that the nodular worm which had been confined previously to the east and southern border was starting west. This is an important matter. You all know that the intestines of sheep are used for sausage casings. The western sheep furnish a good casing free from the nodular worm. The eastern and southern sheep furnish poor casings because of this parasitic infestation. If this disease continues to spread it will cause a serious loss. But unless you know something about parasitology you would not recognize this fact and thus you will not check it. Also we know entirely too little about treatment. The entire topic of anthelmintics needs overhauling and revision. It is surprising to find how ineffective the average much used anthelmintic is when you put it to the acid test of killing the treated animal afterwards and finding what worms are left. You treat the animal and get some worms. To some of you that represents all the worms the animal had to give, but if you kill the animal, that is a different story. There seems to be a disposition among veterinarians and medical men to say that a single anthelmintic is effective against anything. The American wormseed, for instance, is a specific almost for the Ascarid group, but it won't eliminate tapeworms. It will once in a long while, but that is not what you want when you are treating for worms—you want efficiency. There is a common belief in the efficacy of mineral mixtures such as salt, ashes, etc., in preventing or curing worms, especially in hogs. When I was in the Bureau, W. D. Foster and I carried on an experiment to test this. The Bureau was not entirely satisfied with our conclusions from our experiments that these mixtures were no good from an anthelmintic standpoint, so they repeated them. They possibly repeated them again after we left, but I will tell you what I think about it personally, and that is that these mixtures are not worth a continental. If you want to feed mineral mixtures to the pigs because they need such preparations, feed them, but if you want an anthelmintic, get one. On the same lines I have given anthelmintics in slops in flock or herd treatment, but I do not think it is any good. It would be nice if we could do it, because no one wants to run down an ordinary 200-pound sow and give her an anthelmintic, but I do not know how to give an anthelmintic except to fast the animal first; anyhow I expect to clear the digestive tract from all food, and then give a dose under the best possible conditions if good results are desired. I want to say you are kidding yourselves when you think you are taking the subject of parasitology seriously, because you are not.

Dr. A. D. Knowles: If we had to study parasitology as Dr. Hall says we should, somebody else would have to support our families. Unfortunately we practitioners have to make a living. However, we should know more about these parasites. We need investigators who can confine themselves to this work and then convey the information to the practitioners. If some system of studying this subject of parasitology would be carried out so that the practitioner could get definite knowledge, it would be of benefit, but the practitioner cannot go ahead and carry out scientific investigations of parasites every time he has a sick animal or every time he holds an autopsy.

Dr. W. Horace Hoskins: I want to express my appreciation of what Dr. Hall has

said, and I want to add to it that those who are in practice in the large centers are confronted with an entirely new situation. I was fortunate during the last six or seven years to have associated with me my younger son, and while we witnessed more than twenty per cent of the practice pass away on account of the automobile, yet a more keen study of parasitic diseases among dogs and cats enabled us to keep up as large an income during those six or seven years as I had enjoyed during the previous twenty-five years. It was not the knowledge that I possessed. When my client walked in through the doorway and asked for an opinion on a case, my opinion might last for a time, but would not stand against that of my son who refused to make a diagnosis before he made a microscopic examination to determine the presence of parasites. Since I left Philadelphia, he has had as large or even a larger income than when I was there. So there is not only the opportunity to increase our knowledge but to benefit by the reward that is going to come.

Shipping Fever

As the request of the association, Colonel Oliver of the British Remount Service addressed those present on shipping fever, as follows:

I am in this country in connection with remount service, and shipping fever is our biggest trouble. I understand that the impression has gotten abroad that I can give you an infallible cure for this disease. I wish I could, but I cannot. We have tried numerous treatments and have had some encouraging results with some of them, but at the same time our main reliance will have to be prevention. We have had better results with some treatments than others, but once an animal becomes infected, our experience is that the situation is not of the best. The animal may be cured, but paraplegia or other sequelae may result which are very detrimental to the subject.

In the treatment of shipping fever we tried various vaccines, inoculations from killed cultures, serum from animals hyperimmunized by the different organisms found in the respiratory tract. and various other treatments, particularly injections of normal salt solution with a certain proportion of soluble iodin. The latter in effect has been the most successful. Dr. Gregg, of Newport News, has done a lot of work on that, and he has figures which show that as far as their experience goes it is the best treatment. The blood is drawn from the jugular vein and an equal quantity of saline solution with a proportion of soluble iodin added, one dram to the pint, is injected. The results are quite encouraging and the treatment is worth continuing. Combined with that we have been most particular in the matter of fresh air, quiet and good nursing. Fresh air and sunlight, I think, are in all cases most necessary. The thing, however, of most importance is to prevent the disease. A number of animals may be saved by treatment, but the loss in any case is bound to be rather high, and there may be unsatisfactory sequelae.

I have here a pamphlet giving the results of experiments carried out in England by Colonel Watkins Pitchford. He has done a good amount of research work in South Africa in connection with horse sickness, working on slightly different lines from those of Dr. Tyler, of Pretoria, with whom I worked for some time. He does not attempt to dogmatize on the experiments, but the results are very instructive. The result of Colonel Watkins Pitchford's experiments up to the present have been that this disease, although it must be regarded as contagious, yet it is not usually conveyed from a diseased animal to a healthy one kept under satisfactory conditions. In fact, it seems to be communicated with the utmost difficulty. He has even tried numerous experiments in taking horses in a state of fever, associating them with healthy animals or those which were susceptible and even going to the length of taking nose bags from animals showing catarrhal symptoms of the disease and putting them onto the healthy horses, but they did not contract the disease as long as the conditions they were living under were satisfactory. On the other hand, if diverse circumstances reduce the vitality to any marked extent, animals get the infection, and also by the inoculation of blood from infected animals into healthy ones, reactions can be produced in almost every case no matter under what conditions the animal is, whether the best or the worst.

That brings me to what, personally, I regard as the basis of the whole of this trouble. This is no different disease from what we have always had to contend with in England in connection with the buying of horses in peace times. In this country you call it "shipping fever," and I think that is probably the best name. In England it is called "dealers' fever," but the conditions are about the same in both cases. They take animals bred on the farm and not exposed to any particular infection of this kind and subject them to abnormal conditions. They subject them to very long train journeys, irregular feeding, etc., and put them into dealers' stables, which are usually most insanitary, and under these conditions the disease develops. In some cases it will develop in almost every animal in a shipment, and yet if one takes that shipment and puts the animals under healthy conditions, there is no spread of the disease. The figures shown here by Colonel Pitchford indicate that under these healthy conditions there is no spread of the disease.

An experiment was carried out in the British Army some years ago not in connection with this disease at all, but with reference to the question of economy. There is a system on the continent of bedding animals down and not mucking them up. In England it is called the continental system of bedding. The animals are bedded down and not mucked up, so in the course of time there is piled up a thick layer of manure. That, of course, is an economy of labor, and a very valuable fertilizer is produced. The question was taken up by the British Army whether or not it would be justified to bed army horses on that system. From the point of view of economy it was quite sound, but they found that this disease, which up to that time had not existed in army stables except in remount stations where it had come from dealers, became so rife that the system had to be abolished. The predisposing cause of this disease is insufficient attention to sanitation in stock yards, dealers' stables, etc., associated with abnormal conditions in moving the animals about in trains which tend to reduce the vitality of the subjects. At the same time they are exposed to infection, which under these conditions is freely conveyed to the animals. Whether one is justified in using the term "contagious" appears to me an open question.

Watkins Pitchford gives the figures from various depots. From certain areas we get a tremendous amount of this disease. Practically every shipment is infected, as much as ninety per cent of the animals from one district being infected, and from other districts not so many, and it varies in accordance with the weather at the time they take the journey. The colonel gives an instance of twenty-five animals moved in one trainload. They were clipped and it was cold weather. Twenty-four of the animals became infected with the disease and eleven of them developed pneumonia. The only difference between that shipment and numerous other shipments carried from the same depot was that these animals were clipped, and although they were blanketed they were not so well protected against the weather as other horses were, showing that it was the unfavorable conditions to which they were exposed that was responsible for their infection.

We have a routine of taking temperatures of every animal at a depot, and we get a number of animals with high temperatures that show no other symptoms. If these animals are kept under normal conditions, the chances are they will not contract the disease, but if they are sent on a long journey, they may become infected.

If the blood of these animals is examined an organism in pure culture may be obtained. It resembles the ordinary hay bacillus. There is some slight difference, but it is closely allied to that, and it is found in pure culture both in the blood and in the exudate either in the lungs or pleura or wherever the exudate is found. If the organism is injected into the blood of a healthy animal there is a temperature reaction in practically every case, and a case of pneumonia, mav or may not develop depending upon the conditions under which the animal is kept in the meantime. Not only that, but this organism reacts very

strongly to the agglutination test, and the injection of blood from an infected animal, whether it shows the organism in the blood at the time of miscroscopic examination or not, affects the agglutination titre of the blood very markedly. It may be that when blood of an infected animal is injected into a healthy animal, the reaction of the agglutination in the animal injected may be more marked than in the one from which the blood was taken, showing that it is not merely a mechanical conveyance of this property. Practically in every case of pneumonia, this organism may be found. There may be other organisms, as secondary invaders imposed on the original infection, which cause gangrene of the lungs, etc. That is only to be expected when the lungs are blocked and cut off from aeration. Under normal conditions it is possible that the pathogenic properties of the organisms are not very highly developed and the animal may be exposed to the infection without showing much result, although if injected into the blood it will produce the disease at the time. On the other hand, if animals are under unfavorable conditions, where they are moved through the country, through dirty yards where manure is piled up, which I see in this country, and which is entirely wrong, there the disease is likely to develop. I have noticed conditions of feeding where enough hay is given to last animals a week, enough corn, oats or bran put in the manger to last two or three feeds and one lot of animals after another is put into these pens. This feed remains there to cultivate the organisms, and a fresh lot of animals is brought in to eat it up. If these animals are in an absolutely healthy condition it may not have any effect, but if they have come from a long train journey, they will very likely become infected under these conditions. Our only hope to control the disease is to handle our animals under as good conditions as possible and to practice thorough sanitation. As long as we have a system of allowing the manure to accumulate on the floors of the pens and a system of feeding heavily infected material, it is very surprising if the disease does not develop.

As far as we have gone in this country in the methods of medication, we have tried extensively numerous of the vaccines with killed cultures, and our results have not been in the least encouraging, and in some cases they have apparently done harm. On the other hand, Dr. Gregg at Newport News has carried out a considerable amount of work with serum from hyperimmunized animals, which up to the present has given encouraging results, and on these lines we propose to work the next few months. It appears to me that is the line of treatment we ought to adopt. The injection of the organism produces a marked reaction in the infected animal, and it seems only reasonable to expect that we should get the same protection in this disease that we get in rinderpest, hog cholera and other disease. We run no risk in using serum, and if it is given in time at the first development of the disease or better still before the animal is exposed, it seems to me that is the greatest hope we have in being able to combat the infection. With regard to drug treatment, I do not have anything special to offer. I think treatment with saline solution and iodin has given the best results and the one that it might be well to continue.

Section on Surgery and Practice

The section of surgery and practice was called to order by the chairman, Dr. T. H. Ferguson, of Lake Geneva, Wis., at two o'clock. Dr. Ferguson addressed those present, speaking on the progress that had been made by the veterinary profession, mentioning eradication of foot-and-mouth disease and rank given to those in army service as the outstanding accomplishment for the year, 1917. He reminded those present of the duties incumbent upon practicing veterinarians as conservers of our meat animals, mentioning the often quoted statement that food conservation might prove the most important factor in winning the world war.

Dr. J. H. Blattenburg, of Lima, Ohio,

secretary, reported officially that inasmuch as this was the first year wherein a secretary was a part of the section on surgery and practice, there was nothing to report.

Coital Exanthema

Dr. Hal Simpson, of Denison, Iowa, read a paper on coital exanthema. Several case reports constituted the principal portion of his contribution. His first case was treated fifteen years ago and no further outbreaks had been brought to his attention until four years ago. He has handled several cases in recent years and in all there has been marked similarity to dourine. In the first case differentiation was established by a blood examination. Each one of the cases recovered, though in one instance recovery was tardy, it having required six months treatment before recovery was complete.

In the discussion of Dr. Simpson's paper, question was raised as to whether coital exanthema was not simply the primary affection and that the subsequent chronic local pustules were due to infection occasioned by streptococci or staphylococci. It was the consensus of opinion that recovery was the usual result in coital exanthema, deaths from this affection being of rare occurrence.

The Abderhalden Test for Pregnancy in Animals

Dr. C. A. Zell, assistant director of the Abbott Laboratories, Chicago, Ill., read a very interesting paper on the Abderhalden test for pregnancy in animals. Dr. Zell began by explaining the Abderhalden test and giving its indications for use in laboratory diagnosis. He mentioned the fact that specific ferments always existed and that to be reliable, materials used in making the test were to be prepared with great care; that, for example, in obtaining portions of placental membranes, he was very careful to include no other tissues but placenta.

In a brief discussion of the technic of the preparation of materials used for the Abderhalden test, Dr. Zell said that subjects were fasted and then given a laxative before blood was abstracted for use. The serum used must be free from red blood corpuscles; consequently, every precaution is taken to separate the serum so that neither corpuscles nor hemoglobin would remain.

The practical application of this test, as it was brought out both by the essayist and in the discussion which followed, lies in its employment in valuable animals wherein sterility has been in existence, or for forensic purposes wherein it is desirable to determine whether or not pregnancy exists. The test is considered reliable in about ninety-four per cent of cases, according to records kept in some eighty-six cases, which Dr. Zell mentioned.

Blood may be taken from any female wherein it is desirable to determine whether or not pregnancy exists and this sent to a laboratory for diagnosis. The customary price for this sort of laboratory diagnosis is $5.00; consequently, veterinarians can well afford to avail themselves of this means of determining pregnancy when occasion arises. The fact that pregnancy is to be determined within ten to twelve days after conception or mating, makes this test valuable in many instances.

Diseases of the Feet

The next number was an illustrated lecture on diseases of the feet by Drs. H. S. Murphy and H. E. Bemis, of the Iowa State College.

Dr. Murphy gave an interesting discussion of the anatomy of extremities, calling attention to the various regions which are of interest to the surgeon, both in performing operations and in the treatment of traumatisms.

Dr. Bemis discussed several operations which the veterinarian is obliged to perform rather frequently. His remarks were elucidated by lantern slides, which showed cases before and after operation. He discussed contraction of tendons and tenotomy in foals and young animals, taking occasion to remark that in these subjects surgical intervention was too rarely employed. He further pointed out that veterinarians were prone to divide the superficial digital flexor tendon in tenotomies when this was not necessary; that often where contraction of the deep tendon, alone, existed division of the superficial tendon only served to weaken the parts

and delayed recovery. He discussed briefly an operation for relief of the comparatively mild cases of quittor, which frequently occur in country practice, and also discussed the radical operation for removal of a portion of the plantar aponeurosis in nail pricks.

In the discussion which followed, the question was raised as to whether it was necessary to support the parts when a tenotomy involving both tendons has been performed. Those present expressed different views in this matter, some stating that little, if any, support was necessary in such cases and others being equally positive that the extremity should be braced by means of a special iron brace of some sort, or by a specially designed shoe, such as the Robert's shoe, or even with a long, flat shoe devoid of calks, which would extend anterior to the toe and whose webs are of sufficient length to extend posteriorly so as to insure stability.

Several mentioned that when tenotomy was performed on both front legs at the same time and if both tendons were divided on each leg it was best to support the subject in slings for a period of two or three weeks. Others thought that in such cases tenotomy should be performed on one leg and an interval of one or two weeks be allowed to lapse before the second leg was treated.

Osteopathy in Veterinary Practice

This paper was presented by Dr. E. A. A. Grange, of Toronto, Ontario. The subject was introduced by a somewhat lengthy discussion of the principles employed in osteopathic practice in the treatment of the human.

Its application in veterinary practice, according to the essayist, is limited at the present time. However, cases were cited wherein nine dogs suffering from goiter were treated and some of this number recovered completely and marked improvement occurred in all but two cases. Dr. Grange referred to cases wherein monkeys had been recently imported suffering from paralytic affection of various kinds, and as a result of osteophatic treatment, ten of the fourteen cases recovered completely. He did not discuss the manner in which treatment was employed in these cases. In the course of his discussion, he stated that nothing had been done in the way of osteopathic treatment in the large animals, but ventured the opinion that good results should attend the treatment of periodic ophthalmia of the horse as it is employed by the osteopaths in treating ophthalmia and cataract in the human subject, although he did not report cases so treated.

In the course of the discussion which followed mention was made of a case wherein there was paralysis of the pelvic limbs in a female dog. This case had resisted usual treatment for about two months, whereupon an osteopathic physician offered suggestions regarding the case after having made examination of the same. In this particular instance, the osteopath discovered a lesion affecting the lumbar vertebrae and he instructed the attending veterinarian to employ gentle means in the manipulation of the parts in a manner that extension of the vertebral column was effected. As a result of these manipulations complete recovery resulted and the subject regained her usefulness to the end that she became a serviceable breeding animal.

Heat Stroke, Its Complications and Treatment

Dr. Rubin Hilty, of Toledo, Ohio, read a very interesting paper on heat stroke, its complications and treatment. Dr. Hilty introduced his subject by discussing the various theories advanced by writers on the subject of heat stroke and sun stroke, theorizing as to the probability of the two conditions being similar though possibly the result of causes that differ. He gave it as his opinion that heat stroke was due to the disturbed metabolism occasioned by very high body temperature and fatigue, and that in these cases cerebral hyperemia was always marked. He endorsed the theory that because of the high temperature, accelerated circulation and respiration, the blood became charged with carbon dioxid.

The essayist mentioned seventy-eight cases of heat stroke which he treated during the summer of 1916 in the city of Toledo. The symptoms which marked these cases were lack of

perspiration, the skin being dry and very hot, respiration accelerated and the temperature so high that it could not be registered by the ordinary clinic thermometer. In practically every one of his cases the subjects were prostrate. Some subjects were more violent than others, though in most cases there were noted restlessness, panting, rapid heart, high temperature, relaxation of the *sphincter ani* and in every case blindness which subsided soon after the subjects were able to stand.

Prognosis in these cases, according to the essayist, is always grave when the subject has been prostrate for any great length of time. Prognosis is also grave when subjects are weak from overwork.

The treatment recommended in these cases consisted in administration of fluid extract of pilocarpin in doses of from two to three drams and this given every three or four hours. In cases where animals are panting, he recommended five-grain doses of *mercurius vivus* applied upon the dorsum of the tongue. When such treatment is given and the respiration is as fast as eighty per minute, one or two such doses administered will, in the course of twenty minutes, reduce the respiratory rate to fifteen or twenty per minute. No explanation was offered for the manner in which this effect was brought about, the essayist considering the treatment as purely empirical, but nevertheless entirely reliable.

Dr. Hilty recommended that in all such cases the patient should be showered with water, but the water used should not be too cold. When subjects are prostrate, they should be taken to a shady place and the cool water baths and enemas continued until the temperature is reduced to 104 or 105 degrees F. As soon as the temperature is lowered to this extent, the cold water is discontinued for the reason that it is apt to occasion chilling of the body. The essayist recommended that ice packs be kept to the head and that stimulants be employed. For stimulative purposes he was partial to the use of Tallianine, but good results, he said, were to be obtained also by employment of camphorated oil. When patients have recovered to the extent of requiring no medical attention, they should be given time to rest and recuperate. Dr. Hilty claimed recoveries in ninety-five per cent of cases so treated.

The complications which are met in the treatment of these cases are chiefly laminitis and pneumonia. Where laminitis results as a complication in overheat, it is in a more active form than that seen in cases which ordinarily result from digestive disturbance. Pneumonia was observed in one case of the seventy-eight reported and this was due to chilling of the body by long continued use of cold water. In a few instances when the subjects were seemingly safely convalescent, sudden deaths took place.

In the discussion which followed opinions were given that it is difficult to distinguish between heat stroke, sun stroke and so-called heat exhaustion, insofar as clinical manifestations are concerned, when the practitioner is called to treat such cases.

It was also pointed out that many cases of heat stroke resulted from near-exhaustion in animals that are stabled where they may not cool off during the night. Animals that are stabled under such conditions become devitalized because of fatigue, inappetence and bad stabling; this makes them very subject to heat prostration. Animals exposed to such conditions should be carefully observed every morning before being put to work, in order to determine their true condition.

Digestive Disorders of Cattle

Dr. D. H. Udahl, professor of veterinary medicine and hygiene in the New York State Veterinary College, Cornell University, gave a very interesting and instructive discussion of digestive disorders of cattle. He prefaced his remarks by an explanation of several charts which showed the normal relationship between the splanchnic viscera of the normal bovine subject.

Dr. Udahl estimated that one-fourth of all the bovine cases treated in the ambulatory clinic at Cornell, were suffering from some form of digestive disturbance. For convenience, in the

consideration of digestive disturbances in the ox, the essayist divided them into two groups: The first, where affection of the first three compartments of the stomach existed; and second, those wherein the abomasum and intestine were directly involved. He further stated that in most instances affection of the first three compartments of the stomach was functional, with the exception of cases of traumatic origin and that structural disturbances frequently affected the abomasum and intestine, the latter being due, not infrequently, to long-continued inflammation and occasionally resulting in marked structural changes of these parts.

Dr. Udahl supported his claims by a recital of a number of cases treated, of which he had complete records. He remarked that the season of the year in which animals were affected had a marked influence upon the character of cases which were to be treated in that season and regulated, in a measure, the character of the feed given. In a case which he mentioned, a four-year-old cow was treated on January 24th, the animal being a heavy milker and fed upon a diet of concentrates and ensilage in order to stimulate secretion of milk, there occurred a digestive disturbance which was to be considered functional. In this instance there was inappetence, lassitude, grinding of the teeth, tenderness upon palpation and percussion over the affected regions.

The essayist took occasion to remark that diagnosis of digestive disturbances in cattle is facilitated by employing a heavy metal percussion hammer and plate for the purpose of determining hypersensitiveness. When one has acquired skill in the use of a suitable form of mediate percussion in these cases, reasonably definite conclusion may be arrived at with respect to the location of the supersensitive areas, and in this way the exact portion of the digestive tract affected may be definitely determined. In addition to this, when one becomes proficient in the use of the phonendoscope it is possible to definitely determine the character of the peristalsis as it exists in any given case of indigestion in the ox.

In another case in a cow that had overloaded while pasturing in a corn field, the following symptoms were manifested: Complete loss of appetite, anxious expression, pulse 96, respiration 20, temperature 103° F. Physiologic movements of the rumen were at the rate of two per minute, but its contents were of a rather compact character.

In this case fluids were injected into the rumen, and the method recommended by the essayist consists in the introduction of a stomach tube into the mouth of the subject and, by means of a pump, water is conveyed into the mouth whereupon the subject swallows water and salt solution without offering serious objection. After having introduced several gallons of water into the rumen in this manner, this organ in kneaded sufficiently to cause the admixture of the water and its contents to take place and normal movement is thus stimulated. One and one-half grains of arecolin together with ammonium carbonate and nux vomica were given. Complete recovery resulted in this case.

Another case mentioned was in a Holstein cow that was nearing the period of parturition, in the spring of the year. In this case, there was inappetence and the owner reported that there had been no fecal discharge for several days. The attitude of the subject in this instance was characteristic; there was manifestation of weakness of the hind parts, the mouth was open and there was manifestation of nausea. There was no peristalsis to be detected. Treatment consisted in the administration of one grain of strychnin, two grains of arecolin and about four drams of aloin. On the following day there was salivation, the pulse was fast and the condition seemed to be generally aggravated. At this time there was given one grain of strychnin and in addition, veratrin. The cow died on the following day and upon autopsy the existence of overloading of the rumen, reticulum and omasum was demonstrated. The essayist's conclusions were that the administration of rapid purgatives are never indicated in such cases. Veratrin was administered as an experiment in this case, but it is

not to be recommended when combined with strychnin. It seemed to intensify the action of strychnin to the extent that there was occasioned evidence of strychnin poisoning to such a degree that the administration of antidotes was necessary in the aforementioned case.

Dr. Udahl stated that traumatic gastritis is of more frequent occurrence than is generally believed; that in these cases there is, in addition to the symptoms usually observed in gastric indigestion, muscular tremors and icterus. In these cases the heart's action is accelerated reaching a rate of 112 or more to the minute, but that the temperature at first is about normal. There is always evidence of pain upon percussion over the region of the reticulum. Another notable and important symptom in these cases is the appearance of blood in the urine. Where animals are kept upon concrete floors this may be readily detected. As the disease progresses, the pulse becomes more rapid and irregular, while the temperature rises to 104° F. or even 106° F. and chills are to be noted. The essayist recommended the use of laxatives in such cases, and for stimulative purposes, oil of camphor. The latter is given in the proportion of one part of camphor to four parts of oil and in doses of from one-half to one ounce several times daily. He prefers the oil of camphor to strychnin in these cases.

In one case cited, the foreign body which was retained in the reticulum, passed out through the floor of the abdomen and recovery resulted. Other cases were mentioned wherein diagnosis was established early and the patients were saved by surgical intervention.

In one case of traumatic indigestion the symptoms progressed to the end that swelling of the legs and brisket occurred, but later the swelling subsided and the patient recovered. Some time later and owing to other causes, this subject died, and upon autopsy the fact was established that traumatic gastritis had previously existed. There was in this instance adhesion of the reticulum to the diaphragm and marked evidence of preëxisting pericarditis.

The essayist remarked that gastric ulcers were to be observed in some cases in cattle and these cases were difficult to diagnose during life. Swiss veterinarians, he said, made a practice of giving hydrochloric acid in such cases and because of the aggravation of the condition occasioned by the administration of the acid they were able to diagnose the condition. This subject has not received much attention in our veterinary literature.

In discussing intussusception, the essayist remarked that this condition was ordinarily easily diagnosed; that temperature is usually normal in such cases, especially during the incipient stages, but that there exists manifestation of colicky pains, suspension of peristalsis and that by rectal examination it is ordinarily easy to locate the strangulated bowel. There are instances, however, when location of the affected part is very difficult. This is especially true in every case of advanced pregnancy. In some of these cases it is practically impossible to locate the affected portion of the intestine by rectal palpation. Furthermore, where there is marked tympany, diagnosis is rendered difficult but in those cases where one is enabled to grasp the affected portion of the intestine, the nature of the affection is easily and definitely recognized. The further statement was made that it was surprising how long some of these cases were able to survive despite the existence of permanent and fatal intestinal obstruction of the intestinal tract.

It is of utmost importance in these cases to note the absence of fecal discharge and it is equally important to note carefully the presence of blood clots within the rectum. An instance was cited wherein an animal was saved by surgical means.

In concluding his discussion Dr. Udahl remarked that hematuria in cattle, which is not due to piroplasmosis, has been the subject of much speculation by writers upon this subject in the past. He stated that in his experience it is to be associated with nephritis, which is secondary to gastro-enteritis, that the changes involving the kidneys are always secondary.

The manner in which Dr. Udahl

presented his discussion, indicated very definitely that he has done much good work in the study of digestive disturbances in the ox and that if time had permitted he might have continued his discussion indefinitely and given much more information of value upon this subject, which is interesting general practitioners more and more every year.

Influenza

Dr. G. W. Dunphy, of East Lansing, Mich., presented a paper on influenza, with special reference to some important complications. He mentioned the fact that influenza, at the present time particularly, was the cause of much loss to the horse industry, not only from the death of affected animals in many instances, but due to the long period of convalescence, which is necessary in practically every case of this kind. At the present time when horses are being purchased for military purposes and being brought together in large numbers, opportunity for dissemination of this disease is present as it has never previously existed in recent times. The markedly contagious nature of this affection makes it a dreaded disease at the present time. The fact that many subjects after having apparently recovered remain "carriers" makes the disease difficult to check. Dr. Dunphy mentioned the fact that influenza is occasionally transmitted by stallions in service as long as ten or twelve months after they have apparently recovered from the disease. He passed over symptomatology without discussing this phase of the affection, stating that symptoms were so generally known that it was not his purpose to dwell upon this part of the subject.

He made an earnest plea that we, as veterinarians, consider it a duty in these times of war to exert our influence and energy to the end that means might be taken to check the spread of this disease. He offered as suggestions for attaining this end, plans which were considered in two general classes. The first was that of thorough and careful disinfection of stock cars, yards and pens for horses during transit to concentration camps. Second, since the use of bacterins for immunization against influenza has proved effective in a sufficiently large percentage of cases, these agents should be employed. In discussing the causative factors in influenza, the essayist stated that pathologists attributed it to a filtrable virus, but it had been found that streptococcic organisms were present in a very large percentage of cases and that markedly good results followed the employment of a bacterin which contained these dead organisms and their products in suspension.

Among the complications that occur in this disease were mentioned laminitis, rheumatism, paralysis, pneumonia, purpura hemorrhagica and roaring. Of these, pneumonia is the more serious complication. According to Dr. Dunphy, when pneumonia occurs as a complication of influenza, a fatal issue is the rule.

Intussusception in Horses and Colts

Dr. J. F. DeVine in presenting this subject emphasized especially the diagnosis of the condition, believing that it is possible to differentiate this affection from other acute gastric and intestinal troubles. It was his early belief after observing a few of these cases that by watching cases of acute colics more or less constantly during the entire attack and until the animal had recovered or died, it was possible to make a reasonably accurate diagnosis and differentiate it from other acute abdominal pain. It has further been the writer's custom to hold a post mortem on all of these cases that prove fatal.

After reviewing the advantages of the stomach tube, trocar, stimulants, liniments and mild cathartics, particularly salines frequently repeated in small doses, favoring these methods as superior to narcotics and anodynes which mask the symptoms rather than relieve the cause, the essayist pointed out that the symptom more or less constant was the serious obstruction of the bowels present.

The points in diagnosis are: First, early acute pain; second, great desire to lie on the back; third, the frequent passage of small amounts of feces during the early part of the attack; fourth, the violent straining such as we often-

times see in impaction of the colon, the absence of this condition being eliminated by rectal examination; fifth, the distressed condition but lack of gastric symptoms; sixth, the apparent inertness of any direct action for relief after the effect of the first dose or two passes away; seventh, the constant acute pain being fully as acute as in intestinal calculus, the latter, however, having periods of intermission of pain; eighth, the hard pulse, distressed look and the high temperature of peritonitis with a lack of cautiousness in lying down, rather a careless or violent throwing; ninth, backing up in a corner and swaying the head up and down; tenth, occasional neighing as the animal nears death; eleventh, the growing tendency as the case advances to continue walking and the peculiar position assumed at times while standing, stretching as a hackney does when standing to be admired; twelfth, while walking a sort of doubling up, so to speak, of the body, with the appearance that the hind parts are going faster than the front. This can be likened to the position that a man assumes in acute abdominal pain when attempting to walk; and last, the almost pathognomonic symptoms when associated with those recited, and that is the holding of the nose against the abdomen for several minutes at a time.

In speaking of these conditions in the newborn foal, he stated that his remarks would be directed at the young man to avoid being accused of egotism. It was his judgment that intussusception is not diagnosed in the young foal with nearly the frequency that it exists, it being of rather frequent occurrence in baby colts, and the least bit of colic pain in these little fellows should always give considerable concern where it continues for any length of time, and scrotal hernia or other causes for the pain are not evident. For relief in the young colt, he advised hot water enemas, to which has been added linseed oil or olive oil, and this to be forced high into the bowel by holding the colt up by its hind legs and allowing either the stomach tube or the horse catheter to be gently passed well into the bowel. He had seen cases where the pain was instantly stopped by this process without any other treatment whatever, indicating that mechanical dilatation relieved what was probably a slight invagination. He has also seen the parts slough away where there appeared to be invagination, where the invagiation seemed to be sufficient enough to cause death of the parts, but not extensive enough to cause apparent obstruction.

He further cautioned the young man as to drenching young colts while in pain as there is great danger of fluids passing into the lungs rather than into the stomach.

As to treatment in the mature horse, it was his belief that in true invagination or intussusception, it was of no avail other than to ease the animal and satisfy the owner, since the large opening in the abdomen that is usually required to locate and disengage a strangulated bowel in a dead horse would certainly discourage one against any attempt to relieve the condition in the living animal.

Serum Treatment of Canine Distemper

Dr. A. Slawson, of New York City, presented a paper on the serum treatment of canine distemper. He stated that for ten years, beginning with the year 1901, his method of treating distemper of dogs consisted in the usual medicinal treatment that was then in vogue, which, of course, included good nursing. Under this form of treatment recoveries occurred on an average, in only about forty per cent. of the cases treated, and the disease would run its course unchecked for a period of three to six weeks.

In 1911, as a result of Torrey's published reports in connection with work done in the production of serum for the treatment of canine distemper, he became a user of serums.

Dr. Slawson considers that the Bacillus bronchisepticus is a very active factor in the production of distemper, if not the real cause.

In a brief discussion of the symptomatology of distemper, the essayist mentioned the following manifestations: cough, which is dry at first and

the result of bronchitis that is incited by the B. bronchisepticus, sneezing, somnolence, inappetence, skin eruptions and digestive disturbances that are characterized by either constipation or diarrhea; more or less fever, the temperature reaching 106° F. or 107° F.; acceleration of the heart's action; pulse that is high at first; hurried respiration and a discharge issuing from the nostrils which is serous at first and later becoming mucopurulent; also congestion of the visible mucous membranes, accumulation of mucus, and later a collection of mucopurulent material between the eyelids, and when the eyes are not carefully attended to, corneal ulcers. In some cases, despite the most careful attention that may be given the eyes, ulceration of the cornea takes place. In cases where digestive disturbances are marked, bowel evacuations are soft, containing blood, and they are of a very fetid odor. In some cases there exists a streptococcic stomatitis. Among serious complications mentioned by the essayist were pneumonia and chorea.

The treatment recommended, and which, according to the essayist, must be instituted early—as soon as diagnosis is established and regardless of the existence of an apparently mild attack—consists in the administration of the Torrey serum (Squibb), suitable medication, according to indications, and very careful nursing.

The average dose of the serum is from three to seven c.c. and three doses are always given. Less than three doses are ordinarily unlikely to bring good results. These serum injections are given at intervals of two days. In puppies of toy breeds that are over six months of age the dose is five c.c., whereas in these animals, when younger than six months of age, three c.c. are given. Serum is used as a curative agent only, with the exception of instances wherein dogs have been exposed to infection. In some few instances where animals are very weak and the heart action poor, Dr. Slawson suggests that it may be necessary to give only two injections of serum.

Medicinal treatment is stimulative in cases where marked depression from intoxication exists and for this purpose strychnin in suitable doses is recommended. Where diarrheic disturbances occur suitable intestinal antiseptics and anti-diarrheic agents are recommended. Antipyretics are not employed, excepting in cases where the temperature runs very high, and then only for a brief period.

The essayist mentioned having employed Echinacea angustifoilia and inula intramuscularly in a few cases, but that results in his experience with this treatment had not been entirely satisfactory. In one instance where this preparation had been injected into the gluteal muscles, paralysis resulted. In other cases he injected the preparation in the muscles of the shoulder, and in this way avoided producing paralysis.

In discussing the problem of nursing in distemper of dogs, Dr. Slawson emphasized the importance of a carefully regulated diet and avoidance of exposure to draughts and inclement weather.

The essayist considers it very important to impress one's clients with the necessity of keeping distemper patients warm, and in cold weather this is best accomplished by using woolen jackets, which are to be worn until the animals are convalescent. While undergoing treatment for distemper patients should not be bathed. It is imperative that animals be kept perfectly quiet while undergoing treatment for distemper, and this should be impressed upon one's clients whenever patients are kept at home for treatment. The diet recommended in serious cases is raw eggs and milk, though other food, if suitable, might well be given.

With the treatment that Dr. Slawson now employs some eighty or ninety per cent. of all cases of distemper recover, and the course of the malady is shortened, so that patients are practically well in about two weeks. Moreover, the shortened course thus made possible forestalls unfavorable sequelae. The serum seems to be a specific agent, in that it antagonizes the effects of the B. bronchisepticus and since the disease does not

ordinarily occur in a severe form when serum is used, secondary infections seldom take place.

In a series of 122 cases, thus treated, 104 recovered. Losses under this form of treatment, when treatment is instituted early, are chiefly due to neglect on the part of those caring for the patients.

It was stated that in some cases bronchitis continues for a time after practically every other evidence of the disease has disappeared. In some of these cases expectorants are of value.

Mastitis

The subject of mastitis was presented by Dr. W. A. Axby, of Harrison, Ohio. He began his discussion of this subject by an anatomical review of the mammary glands. He stated that the cows were more susceptible to mammary affections, chiefly because of the better development of the mammae; that inflammation of the udder occurred usually during the first three months of lactation. Dr. Axby considers bacteria which gain entrance by way of the teat ducts as the real cause of mastitis.

Among the causes mentioned, the essayist enumerated the following, in the order as here given: Injuries of various kinds, including wounds of the udder and even wounds of other parts of the body; retained secundines and infection in these cases from material gaining access to the parenchyma of the udder by way of the teat orifices; infection transmitted from one animal to the other by milkers; contamination of the udder during treatment for milk fever by careless or incompetent persons; infections resulting from operations performed upon the udder or teats; the indiscriminate and careless use of milk tubes; cow pox; tuberculosis and actinomycosis.

According to the essayist the pathological anatomy of mastitis varies in direct proportion to the character of the affection and its duration. Where the causative organisms are virulent in character, the condition is perforce, grave. For instance, in cases of gangrenous affections, the disease runs a rapid and often fatal course. On the other hand, where the nature of the contagium is such that no serious changes are occasioned, the course of the affection is mild. Again, greater harm results from extensive involvement of the parenchyma of the udder. In some cases there occurs desquamation of the epithelium and such detritus is evacuated by milking, in which case serious results may not follow.

The essayist did not discuss symptoms in a specific manner, but considered them in a general way, stating that the cases with lesions vary in different instances.

The prognosis is always to be guarded in mastitis in cattle. In the discussion of treatment it was emphatically stated that if good results were to succeed any line of treatment, it should be instituted early. He considered treatment in two classifications: general and local. The general treatment recommended was the administration of a saline cathartic and diuretics. Good nursing is an important factor in the treatment of these cases. The essayist mentioned the use of formalin given internally and also spoke of beneficial results attending the administration of potassium iodid. He did not recommended the use of bacterins, stating that they had failed to give good results in his experience in treating these cases.

The local treatment outlined consisted in the intramammary injection of normal saline solutions at body temperature, after which the udder is massaged gently and the solution is removed. In handling sensitive patients, he recommended that they be cast for this operation. He recommended for some cases the injection of a 1 to 1000 solution of chinosol solution, this solution to be left in the udder for twenty-four hours and then withdrawn. He stated that three such treatments were sufficient to bring about good results in many instances. The essayist also mentioned the injection of suitable solutions of iodin.

In considering the treatment of gangrenous mastitis, Dr. Axby advised surgical drainage of affected quarters or, if necessary complete amputation of the udder.

In the discussion which followed the presentation of this paper, it developed that there was a consensus of opinion that the introduction of hydrogen peroxid, oxygen or air in mastitis was more likely to be detrimental than beneficial; that, in many cases these agents simply serve to hasten the extension of the infection, the opinion of the majority of those who expressed themselves on the subject being that the antiseptic action of hydrogen peroxid or oxygen gas was too feeble to control the average infection in these cases.

Dr. J. N. Frost, Cornell University, described at some length the use of formalin given internally in mastitis. He corroborated the statement made by Dr. T. H. Ferguson of Lake Geneva, Wis., that in some instances infectious mastitis was readily spread from one animal to others in dairies, particularly when milking machines were used without exercising precautions to prevent the spread of this infection. In his discussion, Dr. Frost cited an instance wherein thirteen cows had been infected in a dairy immediately following the affection of one animal, that it was clearly evident that the disease had been transmitted from the original case to those subsequently attacked. He recommended giving one ounce doses of formalin in capsules daily for about a week and that in many serious cases it was advisable to give three one ounce doses daily for the first day or two and subsequently, ounce doses daily will suffice. He recommended, as did several others, the employment of a suspensory bandage carefully applied to relieve the udder of its own weight and to enhance resolution of the peculiar inflammation which characterizes these cases.

Dr. J. F. DeVine of Goshen, N. Y., mentioned among other things the importance of massage and frequent milking in cases of mastitis when the acute stage of the affection has subsided. Opinions differed regarding the employment of the massage but the majority who expressed themselves endorsing frequent massage and milking as soon as considerable effusion existed. Dr. DeVine recommended, in addition to suspensorium, the local application of antiphlogistin or other suitable cataplasms to the udder at night and that these be left in position until morning.

Dr. J. H. Battenburg of Lima, Ohio, in discussing suspensory apparatus, illustrated with a drawing, his method of applying a triangular piece of cloth for supporting the udder. This cloth after having been tailored to fit the contour of the udder is fashioned in the shape of a triangular suspensorium with a concavity that is fitted to accommodate the udder. The apex of this triangular bandage is directed backward between the subject's hind legs and the base line is situated transversely in front of the udder with its corners directed upward in the region of each groin. To each one of these corners, cords are attached that are passed upward converging at a point above the lumbar region where they are tied. To these cords is attached a rope which passes over two pulleys in the ceiling of the dairy barn and a suitable weight is employed to keep the suspensory bandage in a comfortable manner regardless of the position that the animal may assume.

All who discussed this subject were agreed that it was very necessary to pad carefully the supporting bandage with cotton or other suitable material to prevent injury being occasioned by pressure upon the udder.

Dr. C. E. Cotton of Minneapolis, Minn., in discussing the subject, endorsed the use of suitable supportive appliances and emphasized a statement made by Dr. Axby in his paper that bacterine were of little use in the treatment of this condition.

Surgical Treatment of Actinomycosis

Dr. L. A. Wright of Columbus, Wisconsin, read a paper on the surgical treatment of actinomycosis of bovine animals. He stated that he had nothing new to offer on this subject but that it was his purpose to make a report of his methods of handling these cases and the results that followed in his practice. His discussion was prin-

cipally a consideration of the treatment of actinomycosis.

The essayist discussed an operation for the relief of actinomycosis wherein he removed the affected bone whenever conditions were such as to make this possible. He implied that bone is often involved in actinomycosis, that it is even affected in some instances during the incipient stage of the disease, when there occurs a large swelling of the soft structures. In such cases, according to Dr. Wright, when it is difficult to observe the foci of infection in the soft structures, one may by scrutinizing the bone in the immediate vicinity of the actinomycosis enlargement, observe bone lesions.

He advocated opening abscesses, evacuating their contents by curettement and then packing the cavities with gauze that is saturated with iodin or with copper sulphate. He also recommended the use of the actual cautery in some cases. Potassium iodid was recommended for internal treatment.

Dr. Wright also discussed salivary fistulae wherein the condition is due to division of the parotid duct. He discussed briefly methods of treatment. such as are used for the relief of the condition of the human. This consists in exposure of the duct and dissection along its course toward the parotid gland so that it may be secured in a fashion that it may discharge saliva into the mouth by way of an artificial opening. This may be accomplished in several different ways. The methods mentioned by Dr. Wright consist in encompassing the duct within a metallic suture so that the tissues contained within the tissue will slough in the course of a few days, thus causing a fistula, which empties into the mouth cavity and as a result saliva is then discharged into the mouth. The outside opening is of course carefully closed by suturing after the duct has been secured in position.

Some Original Methods, Instruments and Operations

This was the subject of a discussion by Dr. Wm. M. Bell of Nashville, Ten. Dr. Bell first discussed a method which he employs for establishing the age of horses that have been fatally injured in cases where litigation results. He mentioned several instances wherein horses had been fatally injured because of having been struck by automobiles and in these cases owners of such horses often claim damages for sums greatly in excess of the value of their animals. In such cases, as well as in other instances, litigants often make the claim that their animals are much younger than they really are and to prevent such evidence being considered further, he carries in his emergency bag a preparation which may, when immersed in hot water, be used to take an impression of the table surfaces of the lower incisor teeth. From an impression thus made, he employs other material in such a manner that there results an exact reproduction of the table surfaces of the teeth of the animal from which an impression has been taken. Then, by introducing Huydekoper's work on the age of the horse, and by comparing with the plates in the book, the impression taken from the animal whose age is in question, he is able to establish definitely the age of the subject to the entire satisfaction of the court. At the time that impressions are taken, the essayist makes a record of all necessary data in connection with the subject in question so that he is enabled to present a complete record of the case should litigation arise.

In many cases, where otherwise desirable, geldings that are used for pleasure driving have the habit of making that peculiar noise with the penis and prepuce which characterizes such animals, an operation for prevention of this condition is possible. It is described by Dr. Bell as follows. After restraining the subject in a standing position by means of a twitch and hopples that connect each hind foot, the sheath is cleansed inside and out. Then the operator inserts two fingers into the lower surface of the sheath and grasps it on the outside with the thumb in such a manner that an elliptical piece of the external prepuce is removed with a pair of scissors at a point far enough posterior to the orifice of

the sheath to prevent a vacuum being formed by the folds of the prepuce. Consequently, it is then impossible for the subject to produce the annoying sound that is habitual with some animals. An immunizing dose of antitetanic serum is given and no after care is necessary.

The essayist exhibited a simple instrument which he employs for the purpose of removal of meconium from the rectum of new-born foals when this is not to be removed by means of enemas. He gave it as his opinion that such conditions were usually seen in male colts, and that it seldom occurred in the female. The instrument is very simple, being a straight bar of steel about five-sixteenths of an inch in diameter and ten inches in length. This bar is turned at each end in the form of a ring, the diameter of which is about an inch. When the instrument is gently inserted into the rectum, the indurated meconium becomes engaged within the circular portion of the instrument and it is then withdrawn and in this manner evacuation is rendered easy.

He demonstrated the use of Withers' straight rope carrier in a fashion to enable the operator to employ it (when properly threaded with a rope) as a noose, which may be engaged about the lower jaw of a fetus or even around its head, whereupon by twisting the handle, the noose is drawn so tightly about the parts that it does not slip off even when attached to the jaw. Those who are familiar with Buchtels' rope carrier, will understand that the principle is the same as with this instrument.

Among other things mentioned, which are of practical importance, may be mentioned metallic splints that are cut from sheet metal, which has been perforated with holes and shaped to fit an extremity. These sheets are to be used in connection with plaster of paris casts. With the employment of these sheets the bulk of the plaster necessarily is greatly diminished and the cast is at the same time considerably re-enforced. Dr. Bell stated that good results followed the employment of such means in horses.

The Distribution of the Median Nerve and the Lameness in Horses Benefited by its Resection.

Dr. Joseph Hughes, President of the Chicago Veterinary College, gave one of his inimitable chalk talks on the disturbances of the median nerve and lameness in the horse benefited by its resection. The essayist devoted the major portion of his time to an exhaustive discussion of the anatomy of the brachial plexus, its principle branches and particularly the median nerve. He illustrated graphically the relative position of the brachial plexus, the median nerve and adjacent structures in the thoracic region.

In discussing the disturbance of the median nerve, Dr. Hughes mentioned indications for the operation of resection of this structure. He advocates division of the nerve at a point proximal to its branches that supply the carpal flexor tendons. It is his opinion that these nerve branches supplying the flexor tendons of the carpus are in a large measure at least, composed of sensory fibers, but that neurectomy which is performed at a point proximal to their distribution in no wise interferes with the function of the carpal flexor tendons. In fact, he practices this sort of neurectomy exclusively and states that in case of tendovaginitis affecting the flexors of the carpus this is the only means of giving relief.

He emphasized the importance of thoroughly mastering the regional anatomy of the part so that trustworthy landmarks for making the cutaneous incision might be employed. He did not discuss the technic of the operation but mentioned that when it was properly done and the wound sutured, little after-care was necessary and results were uniformly good, if the operation were employed only in cases where it is indicated.

Dr. R. R. Dykstra, professor of surgery, at the Veterinary Department of the Kansas State Agricultural College, and Dr. H. S. Murphy, professor of Anatomy, Veterinary Department, Iowa State College, took issue with the essayist in expressing opinions that the branches supplied to the flexor tendons of the carpus by the median nerve

were chiefly of motor origin, and that these branches should not be included in median neurectomy.

The Avenue of Invasion and the Behavior of Abortion Infection in the Uterine Cavity.

This subject was discussed by Dr. W. L. Williams.

Clinic

Securing cows for udder operations was demonstrated by Dr. J. P. West of Madison, Wisconsin. No new method of casting the cow was displayed, Dr. West stating that the double half hitch method appeared to work better than any other as it gave an opportunity to stretch the animal out, which was necessary when it was required to be down for any considerable time.

An operation for obstruction of the teat of cows was performed by Dr. T. H. Ferguson of Lake Geneva, Wis. He pointed out that cases of obstruction of the teat were of frequent occurrence among cows kept in the old fashioned stanchions. There is a hard indurated swelling at the end of the teat probably caused by one of the neighboring cows stepping on it, and there is inability to get milk from the teat except by using the milking tube. If the milk tube is used, however, without any correction of the condition, the cases are likely to terminate in loss of the quarter containing the affected teat. The quarter becomes infected and sometimes mastitis develops in the other quarters. The treatment that had proved successful in Dr. Ferguson's practice and which he demonstrated, was to clean the cow's teat, paint it with iodin and slip a teat bistoury into the opening, dividing the sphincter muscle where it is swollen. The condition is benign at the start but later the teat becomes swollen. It would perhaps not require any operation were it not for the fact that the milk must be removed. The swelling is divided into four equal parts by the bistoury and the cow leaks milk directly after the operation, but as the wound heals, she holds the milk. Occasionally a heavy milker will continue to leak milk from that quarter, but if the operation is properly performed, they should not leak, but will be easy milkers.

Other operations demonstrated were one for roaring in horses by Dr. I. H. Blattenberg of Lima, Ohio; median neurectomy by Dr. T. H. Ferguson; surgical treatment of sterility by Dr. W. L. Williams; extraction of molars under nerve blocking anesthesia by Drs. H. E. Bemis and L. A. Merillat; special procedure against sidebone by Dr. L. Hart, Chippewa Falls, Wis.; hernia operation by Dr. Geo. B. McKillip, Chicago; operation for poll evil by Dr. C. A. White, Chicago; a new operation for recto-vaginal fistula by Dr. R. C. Moore of St. Joseph, Mo.

A NEW VETERINARY QUARTERLY

The Veterinary Review, edited by O. Charnock Bradley, M. D., D. Sc., M. R. C. V. S., Principal of the Royal (Dick) Veterinary College, Edinburgh, is a quarterly publication, of which so far two numbers have appeared—February and May, 1917. As stated by the editor in the first number, the purpose of this periodical is to give a review of the important current veterinary literature for the benefit of veterinarians, since owing to the fact that there are about one hundred periodicals devoted to veterinary science, besides numerous articles appearing in publications not exclusively veterinary, it is impossible for the practitioner and even for the specialist to read them all. This quarterly consists of 110 pages, one original article being included in the contents of each issue and the balance made up of departments devoted to abstracts, reports, reviews, notes on books and bibliography. The subscription price is $2.50 a year. W. Green & Son. Ltd., Publishers, London and Edinburgh.

AMERICAN JOURNAL of VETERINARY MEDICINE

Published Monthly by
AMERICAN VETERINARY PUBLISHING CO.,
9 So. Clinton St., Chicago

Entered as second-class matter, July 19, 1910, at the postoffice at Chicago, Illinois, under act of Congress of March 3, 1879.

GUARANTEED PAID CIRCULATION OVER 8,500 MONTHLY

Address all communications to the AMERICAN JOURNAL OF VETERINARY MEDICINE, 9 South Clinton Street, Chicago, U. S. A.

Subscriptions from the United Kingdom should be sent to our London office in care of Messrs. Bailliere Tindal & Cox, 8 Henrietta Street, Covent Garden, London, England.

The Subscription Price of this Journal Will Probably be Raised

WITH this issue contracts for paper, printing, engraving and other things that go into the make-up of this magazine expire, and new contracts must be made. Months ago we explained to our readers of what the then increased cost in the manufacture of magazines meant to us and the steps that had been taken to offset it in part. Economies in production have already gone as far as they may without lowering the high standard of excellence of the Journal and this we are unwilling to do. To pinch and pare further would be at the reader's expense and unjust, since having subscribed for a publication of a certain standard he is cheated if that standard is then lowered.

Increasing our subscription price has been deferred as long as possible. The advertising rates were increased the first of the year. Soon after the cost of white paper and other materials that go into the make up of periodicals began mounting in price, a large percentage of the popular magazines increased their subscription and news stand prices. It was the business thing to do. A few months ago, nearly three hundred newspapers increased their selling price 100 per cent. The class publications, perhaps because their relations with their subscribers have been closer, are the last to increase their subscription rates. Most of them, however, have been forced to increase their prices before this. The remainder face the alternative of an advance in price or a lowering in quality.

At the expense of the appearance of our Journal, a lighter stock has been used lately and the amount of white paper was, in this manner, decreased. At the inconvenience of some of our readers, a smaller type was used and the number of pages thus reduced. Extraordinary and unusually successful efforts were made to add new subscribers to our list, since the more copies of the Journal there are printed at one time, the less is the cost for each copy, but all of this does not offset increased cost of production.

Some enumeration of the items in the increased cost of producing the magazine may be in order. White paper, the largest single item of expense, has advanced in price more than 100 per cent since war conditions have prevailed; lead, antimony and tin, constituents of type matter, have advanced 173, 243 and 53 per cent, respectively; zinc, 173 per cent; potassium cyanid, 582 per cent; wrapping paper nearly 200 per cent; ink from 57 per cent to more than 100 per cent; charcoal, 250 per cent, and so on does it continue. Of all of the material most used in the manufacture of magazines, only one

has decreased in price. The others average more than 100 per cent increase.

The hazards of the publisher are not over. Increases over the present extraordinary costs are almost sure to come. The proposed war revenue measure now before Congress increases largely the burden of publishers. The burden of an increase in subscription price will be widely distributed and will fall but lightly upon our readers. It assures a continuance of the present high standard of the Journal and continued improvement as heretofore. Would readers have much faith in the independence and integrity of a journal supplied them at a price less than cost? Would they not surmise that the temptations of sinister influences might less readily be withstood? An increase in subscription price at this time is in line with justice, fair play and public interest.

We believe that readers will recognize the economic soundness—the imperative necessity—of an increase in the subscription price of the Journal. It is no less than fair and square, and, moreover, the Journal is a good buy at twice the present cost, and the increase in the subscription price will not be 100 per cent, at least not now.

BOOK REVIEW

Materia Medica and Therapeutics, Including Pharmacy and Pharmacology, By Reynold Webb Wilcox, M. A., M. D., LL. D., President of the American College of Physicians, etc.

This, the ninth edition of the work, conforms with changes made in the last revision of the U. S. Pharmacopeia. As the author has stated in the preface, "In order that the subjects might be presented in one volume and all repetitions avoided, cross references have been inserted and an exhaustive index added for the convenience of physicians who use this as a book of reference." This indeed makes the work a very good one for ready reference.

Doses are given in the metric system and, parenthetically, also in the apothecaries'. The book is, in a volume of 860 pages, at once a good presentation of the subjects of materia medica, pharmacology and therapeutics.

Cloth bound; price $3.50. P. Blakiston's Son & Co., Philadelphia, Pa.

Epizootics and Their Control During War, Veterinary Medicine Series No. 15, by Herman Miessner, translated by A. A. Leibold, D. V. M. There are a large number of excellent books that deal with infectious diseases, but it seems there are none that meet the need for which this one is intended—a need of the man in the field to have at hand a small consulting book that contains everyday matters of importance.

All means of combating epizootics (except hog cholera) are given in this book in their entirety, including clinical and laboratory diagnosis, treatment, quarantine, disinfection and and disposal of dead animals.

It was prepared by a veterinarian in military service with a view to meeting the needs of army veterinarians, but it meets well the needs of veterinarians in civil practice who at this time, when the conservation of horses and of food producing animals is of such transcendent importance, must guard as never before the live stock industry of the country.

Published by the American Journal of Veterinary Medicine; cloth bound; 215 pages; 37 illustrations; price $2.00, prepaid.

Tuberculosis of the Fowl

By Dr. B. F. Kaupp, North Carolina Experiment Station, West Raleigh, N. C.

Reprint from *The Poultry Item.* Tuberculosis among chickens is discussed briefly in this folder, which also contains an illustration of the abdominal organs of a hen affected with the disease. It is recommended that a tuberculous flock should be disposed of, all the birds killed and inspected, and the infected carcasses burned, while those not affected may be used for food purposes. The statement is made that under no consideration should the birds be sold alive on the market.

All men are liable to error, and most men are, in many points, by passion or interest, under temptation to it.—Locke.

BULLETINS OF INTEREST TO VETERINARIANS

Live Stock Classifications at County Fairs

By S. H Ray, Animal Husbandry Division, Washington, D. C.

Farmers' Bulletin 322, U. S. Department of Agriculture. The author discusses quite thoroughly the classification of show animals, pointing out that this feature is often neglected at county fairs, thus rendering the exhibits of little instructive value to the public. Instructions for the proper classification of domestic animals at fairs are given and should prove helpful to all who are interested in live-stock exhibitions.

Mites and Lice on Poultry

By F. C. Bishopp and H. P. Wood, Washington, D. C.

Farmers' Bulletin 301, U. S. Department of Agriculture. A description of mites and lice affecting poultry is given, illustrated with twelve drawings of the different parasites. Sodium fluorid is recommended as a cheap and effective insecticide, it being claimed that a single application, costing about half a cent, will destroy all of the lice on a bird.

Equipment for Farm Sheep Raising

By V. O. McWhorter, Washington, D. C.

Farmers' Bulletin 310, U. S. Department of Agriculture. Plans and specifications, illustrated by drawings, of buildings, pens, feed racks, troughs, dipping vats, etc., are given in describing the equipment necessary for raising sheep on farms. It is stated that adequate facilities can be provided on the average farm without great expense.

The Sheep Tick and Its Eradication by Dipping

By Marion Imes, Washington, D. C.

Farmers' Bulletin 798, U. S. Department of Agriculture. The nature, habits and methods of identifying the sheep tick are outlined in a comprehensive manner. The only practicable way of destroying the parasite is said to be by dipping the sheep, two dippings about twenty-four days apart being recommended. The lime-sulphur-arsenic dip is stated to be the most efficacious of home-made preparations, full directions for making the dip being given. Methods of dipping large and small flocks are also discussed.

Horse Breeding Suggestions for Farmers

By H. H. Reese, Washington, D. C.

Farmers' Bulletin 803, U. S. Department of Agriculture. The use of specially selected mares on farms leads to two lines of profit—in raising colts and in doing farm work. This bulletin discusses the important points to be observed in horse breeding. Good breeding is held to be absolutely essential, but it should be supplemented by proper feeding and management. Several illustrations have been included depicting horses of good quality and also animals of inferior breeding showing defects in conformation.

Studies in the Cost of Market Milk Production

By A. C. Anderson and F. T. Riddell, East Lansing, Mich.

Bulletin No. 277, Michigan Agricultural College. The results of an inquiry into the cost of producing milk for the city market are presented in some detail. The investigation was carried on in twenty-five dairies during the years 1913 to 1916. Eighteen dairies showed an average yearly profit of $281.43, and seven showed an average yearly loss of $256.61. The losses were due to various conditions, but tuberculosis played a very important part in placing some of the herds in the liability column.

A Brief Discussion on Sheep for Louisiana Conditions

By W. H. Dalrymple, M.R.C.V S., Baton Rouge, La.

Circular No. 22, Louisiana State University. The writer is of the opinion there should be some sheep on every farm in the state, and that if intelligently handled and cared for they constitute one of the most profitable branches of animal husbandry. The different breeds and their adaptability to Louisiana conditions are discussed and, while no single breed is specifically recommended, the suggestion is made that the Shropshire ram could perhaps not be excelled for grading up the native flocks of the state.

Thirty-Eight Questions and Answers Concerning Charbon or Anthrax

By W. H. Dalrymple and E. Pegram Flower, Baton Rouge, La.

Circular No. 7, Louisiana State Live Stock Sanitary Board. The questions and answers in this pamphlet contain a concise, synoptic account of the present knowledge available regarding anthrax, its etiology, symptoms, diagnosis, spread and methods of combating.

The Antigenic Value of Spirochaeta Hyos in Complement-Fixation Tests on Hog Cholera Sera

By Walter E. King and R. H. Drake, Detroit, Mich.

Research Laboratory, Parke, Davis & Co. The laboratory diagnosis of hog cholera is discussed and experiments described regarding the use of antigen from spirochaeta hyos in this connection. The conclusion reached is that such antigen possesses well marked specific complement-binding properties, and that the method may be used to practical advantage in diagnosing hog cholera.

NATIONAL MEETING OF SPANISH VETERINARIANS

The National Veterinary Assembly of Spain will hold its fourth meeting in Barcelona, October 21 to 27, 1917. The sessions will be held in the private executive chambers of the Medical Faculty of Barcelona.

The program is divided into two parts, the first being of professional, and the second of general interest.

Part I

A National Union, by Don Felix Ordas, Madrid,

Modification of the Epizootic Regulations and the Payment of State Livestock Sanitary Inspectors, by Don Ricardo G. Marco, Borjas Blanco,

Supervision of Abattoirs, by Don Cesareo S. Egana, Malaga,

The Veterinary Doctorate, by Don Manuel Medina, Ceuta,

The Red Star (Neutralization of the Veterinary Personnel), by Don Jose Rueda, Barcelona.

Part II.

Providing Horses for the Army, by Don Vincente Sobreviela, Zaragoza,

The Disposition of Abattoir Waste, by Don Benigne G. Neira, Barcelona,

The Inspection and Regulation of the Milk Supply, by Don J. M. Alemany and Don Francisco Surgarañes, Barcelona,

The Meat Supply, by Don Juan R. Codina, Coruña.

In addition to this program, prizes and medals are offered for papers on various veterinary and livestock subjects.

N. S. MAYO.

DIFFERENT TYPES OF STREPTOCOCCI AND THEIR RELATION TO BOVINE MASTITIS

G. Mathers, Journ. Inf. Dis.

Careful bacteriologic studies of many epidemics of acute tonsilitis have yielded convincing evidence that the infection may be milk-borne, and that the cause is a virulent hemolytic streptococcus. Little is known about the behavior of various strains of streptococci in the environment furnished by infected udders. Do the differences between strains or streptococci of human origin and those of bovine origin represent changes due to environment?

An important factor in streptococcus infections of the udder emphasized by these experiments is the length of time that the organisms may be found in the milk.

Different types of streptococci of human origin may cause mastitis if they gain entrance into the milk ducts. Virulent hemolytic streptococci may grow and multiply in the milk ducts of a cow without causing any visible changes in the udder.—*Veterinary Review*, Edinburgh.

KENTUCKY VETERINARIANS HOLD GREAT MEETING

The accompanying sketch was made at the meeting of the Kentucky Veterinary Medical Association, held at Shelbyville, June 20th and 21st. It shows a few of the notables who took part. This was a sure enough veterinary association meeting with big company from "way off," music, feasting, lots of clinics and everything.

Besides those shown in the drawing, we had with us Dr. McNeal, just back from a foreign land; Dr. Walsh of Lawrenceburg; Dr. McClure of High Grove; Dr. Tiffin of Frankfort; Dr. Polk of Lexington; Dr. C. L. Smith of E'town; Dr. "Casey" Jones of the Bourbon yards: Dr. Gray of Shelby; Dr. Glacken of Richwood; and a score of others from all over the state whom we "mugged," but this was the last of our stock of paper, laid in before the war.

Drs. Purdy and Ditto arranged the entertainment, which included visits to some of Shelby county's famous Jersey and beef cattle breeding farms. From 9 a. m., the 20th, to 9 p. m., the 21st, there was something doing every minute. Everything was done for the temporal and spirtual welfare of the guests. Ministers of three different denominations were there to invoke blessings upon the work of Kentucky's veterinarians, while Shelby's fairest daughters, enlisted in the Red Cross, white-robed like angels, mingled betimes amongst the throng. It was sure near-heaven and a great awakening of Kentucky veterinanians, and there's a reason.

For years the veterinarians have striven to have a law passed recognizing the profession in this state. About the last day of the last legislature, a law regulating the practice of veterinary medicine and surgery in Kentucky was placed on the statues and went into effect January 1, 1917. It is not a perfect law by any means nor has it been enforced as we think it should have been, but it is an entering wedge and has aroused the profession and awakened a vigor which portends results. It has not been uncommon in the past for qualified veterinarians to be ridiculed in our legislative halls by members from "back in the sticks," but a few more meetings like this and the prospective solon will be hunting up the vets.

Some familiar faces missed were Dr. Alex. Harthill, dean of the profession in Kentucky; Dr. Harthill, the younger; Drs. Chawk, Riester, Riede and Lang, all of Louisville; and our old friend, Dr. F. T. Eisenman, for many years state veterinarian and a worker for better conditions, who long ago sowed some of the seed that is now bearing fruit. But we meet again at the state fair at Louisville on September 14th and 15th, when surely they will all be there when we will

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DR. J.K. "DITTO"
SEGTY WESTMORLAND LOOKS JUST LIKE THE EAGLE ON THE DOLLAR
Dr. M.A. PURDY PROUDEST MAN IN Ky JUNE 21, 1917.
65 MILES AN HOUR DOG
DOC OT GRISLER TAKING STATE VET MUSSELMAN'S BLOOD PRESSURE
THE JEN-SAL
DR HUGHES DEMONSTRATES A BRACHIAL PARALYSIS
DR. MOORE LISTENING FOR SOMETHING NEW.
DER STAR SPANGELT BANNER AGH LONG MAY SHE SHINE UND RAUS MIT YAH RAUS MIT DER WACHT AM DER RHINE
DRS HANS GIESKEMYER & FRITS GALLDEMIER Singing Patriotic Songs
POLITICIAN WHO IGNORED The Ky. V. M. A.
I am 'suffrin' wid content ment"
Dr DEPEW CHAUNCY HANAWALT B.A.I.
Dr A.J. PAYNE B.A.I. MAKING Some Strong STATEMENTS REGARDING HOG CHOLERA
OLD IRONSIDES Shelbyville Ky June 21 '17

1, Dr. Schneider of Nicholasville, assistant state veterinarian; 2, Dr. Hamilton of Paris, livestock inspector of Bourbon; 3, Dr. Fisher of Paducah; 4, Dr. Barnes of Dayton; 5, Dr. G. T. Isbell of Hopkinsville, president of the association; 6, Dr. Huffman of Paris, also a breeder of Poland Chinas; 7, Dr. Robinson of Mt. Sterling; 8, Dr. Taylor of Stanford; 9, Dr. Phelps of Lexington; 10, Dr. B. H. Beuter of Louisville, a big man with a heart to match, not practicing (don't have to) but "there" with his end all the time; 11, Dr. "Dick" Deats of Bardstown, livestock inspector of Nelson; 12, Dr. W. H. Simmons of Louisville, Lexington and the state at large.

be the guests of "Mat" Cohen, commissioner of agriculture, good fellow and good friend of the vets.

"OLD IRONSIDES," D. S.

AN IMPORTANT DECISION ON POTENCY STANDARDS FOR SERUMS

An Iowa law makes it the duty of the director of the state chemical laboratory to "establish and declare the standard degree of potency of hog cholera serum for successfully treating, curbing and controlling hog cholera." Sale of serums failing to come up to such standard is made unlawful. As a purported compliance with this law, the director of the laboratory adopted the following requirement: "The dose, which shall be stated on the label, must be sufficient to prevent a susceptible hog of the weight the dose is recommended for, from showing symptoms of hog cholera when injected hypodermically with two cubic centimeters of virulent blood, which will produce hog cholera in susceptible hogs of the same weight within eight days after being inoculated with the same quantity of virulent blood."

In the recent case of Hollingsworth vs. Midwest Serum Co. (162 Northwestern Reporter, 620) the Iowa Supreme Court denies the right of plaintiff to recover damages claimed to have resulted from defendant's sale of serum not conforming to the standard fixed by the director of the state laboratory; the decision being based on a view taken by the court that the director's regulation is not responsive to the law under which it purports to have been adopted, in that the law contemplates a standard test applicable before sale of serum, whereas the director's test applies to results to be obtained by the buyers. This discrepancy in the time as of which the test shall be made is found to be material in view of the undisputed fact that such serums deteriorate rapidly.

"If the director of the laboratory had prescribed some definite test which should be conformed to by the producer before he should market his serum," said the supreme court, "it would doubtless have been fairly responsive to the statute, and, perhaps, the only compliance therewith possible. We are satisfied, however, that no power is conferred upon the director to declare that ultimate results in the use of the serum shall be conclusive upon the producer or render him subject to prosecution notwithstanding that the serum met the legal test at and before its marketing. The statute does not make the producer a warrantor of results, nor does it authorize the director to make him such. This view is emphasized by the further consideration that the serum when completed is subject to rapid deterioration, and has need to be kept with great care under seal and refrigeration. We are of the opinion, therefore, that the declaration of the director was not responsive to the statute, and was not warranted thereby. The criterion which the director is authorized to declare must be applied as of the time at or before the marketing of the serum and not after marketing."

The result of this holding is that there was no violation of the Iowa statute. As additional points affecting plaintiff's right to recover, the court holds that the burden was on him to show the defendant negligently failed to furnish reasonably effective serum, and that the evidence was insufficient to establish such negligence.—*Druggists' Circular.*

PRESIDENT URGES COLLEGES AND TECHNICAL SCHOOLS TO MAINTAIN THEIR COURSES ON USUAL LINES

It would seriously impair America's prospects of success in this war if the supply of highly trained men were unnecessarily diminished. There will be need for a larger number of persons expert in the various fields of applied science than ever before. Such persons will be needed both during the war and after its close. I therefore have no hesitation in urging colleges and technical schools to endeavor to maintain their courses as far as possible on the usual basis. There will be many young men from these institutions who will serve in the armed forces of the country. Those who fall below the age of selective conscription and who do not enlist may feel that by pursuing their courses with earnestness and diligence they also are preparing themselves for valuable service to the nation. I would particularly urge upon the young people who are leaving our high schools that as many of them as can do so avail themselves this year of the opportunities offered by the colleges and technical schools, to the end that the country may not lack an adequate supply of trained men and women.

WOODROW WILSON.

Members of the Tri-County Veterinary Medical Association in session at Richmond, Ind., July 11th, passed a resolution whereby members not eligible for war service will take care of the practice of those called to the colors.

One science only will one genius fit,
So vast is art, so narrow human wit.
—Pope.

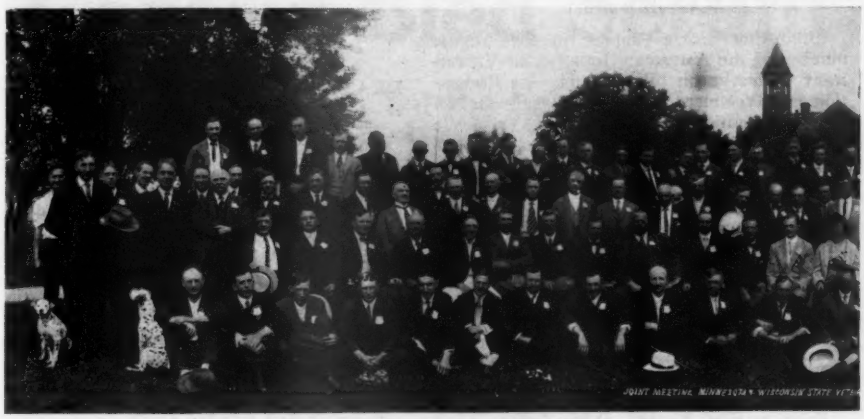
In every epoch of the world, the great event, parent of all others, is it not the arrival of a Thinker in the world?—Carlyle.

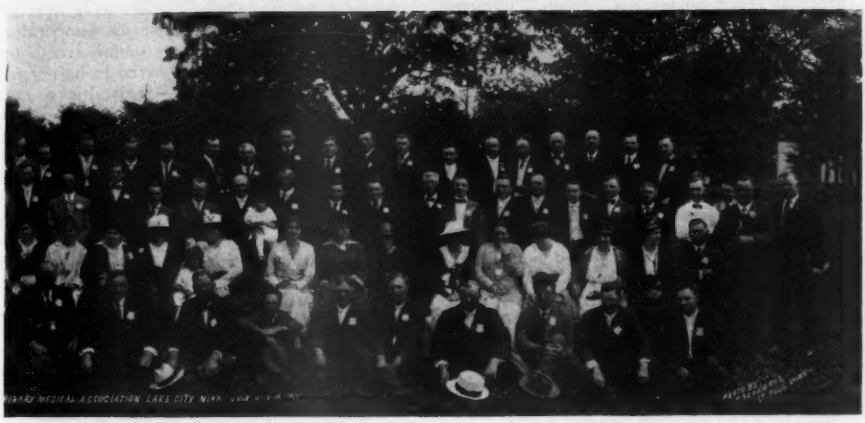
JOINT SESSION OF THE MINNESOTA AND WISCONSIN ASSOCIATIONS

As far as the writer knows this was the first joint session between two states held in this section of the country. Inasmuch as it was a new thing and an experiment, it had been looked upon as questionable whether it would prove a success or not. On the night of July 9th and 10th, a heavy downpour of rain, which was general throughout this section, made the roads almost impassable for automobiles, and as a great many had planned on making the trip in that way, there was certainly a falling off in attendance. But in spite of this there were 150 actually present. It was one of the most harmonious, instructive, and social meetings that we have ever held here.

Lake City is a beautiful spot on the Mississippi river, and the accommodations for a summer meeting cannot be excelled anywhere. The people of the city themselves, deserve special mention in this particular case for the courtesy and hospitality shown to the visiting veterinarians.

The banquet on Thursday evening, held at the camp grounds of the Minnesota National Guard, on the shore of beautiful Lake Pepin, was a credit to the members of the Association of Commerce, and that, together with the scenery and the natural setting, will linger long in the memory of every one present. Arrangements were made for a dance after the banquet, and many stayed until the small hours of the morning enjoying the festivities. Many prominent veterinarians remarked that such a scene had never been staged before by any organization.





The promoters of this joint session hope that it will encourage the holding of this kind of meetings all over the country. The program was a very interesting and instructive one, and many timely topics were discussed throughout the session.

Drs. C. W. Gay, A. T. Kinsley, R. C. Moore, Joseph Hughes and J. V. Lacroix, who were in attendance from outside the two states, took an active part in the program, and were heard to express their belief in the holding of joint sessions for the general good of the profession.

Winona, Minn. G. E. LEECH, Secy.

SOLUBLE IODIN IN THE TREATMENT OF PNEUMONIA

(Advertisement)

Interesting articles appear in the August number of the AMERICAN JOURNAL OF VETERINARY MEDICINE on "Pneumonia,—Its Prevention and Treatment, as Observed at the British Remount Station, Newport News, Va." We note, particularly, treatment No. 1, page 510, in which normal salt solution and soluble iodin are used as a curative measure and in which superior advantage of the use of soluble iodin is shown. Also, in "Prevention and Treatment of Pneumonia Aboard Ship," page 511, normal salt solution and soluble iodin are used with marked success.

For the benefit of readers of the JOURNAL who are especially interested along these lines we add to the above the results of soluble iodin (Miller's) as used in the Kansas City horse and mule market.

Prior to Oct. 1, 1915, the mortality from catarrhal fever, pneumonia, pleurisy, influenza (pink eye), purpura, laryngitis, etc., reached the astounding height of over 25 per cent. On this date (Oct. 1, 1915), 1500 sick horses were put under treatment with soluble iodin (Miller's). Each day of the sixteen months following there were added from 100 to 200, or a total of 85,000 sick horses. Within thirty days from beginning treatment with soluble iodin (Miller's) the death rate was reduced to ½ of 1 per cent. (See report in April, 1916, AMERICAN JOURNAL OF VETERINARY MEDICINE). Treatment of all cases was by the month. Mild cases received fifteen drops soluble iodin (Miller's) to one ounce water through a dose syringe every two hours during the day, or eight doses. Severe cases were given thirty drops soluble iodin (Miller's) to one ounce water in the same manner every two hours day and night.

30,000 horses from the Kansas City market, the majority of which had been treated as here shown, were sent to the Mexican border. The marked condition of fitness with lack of tendency to relapse in these horses compared with like shipments from other points, excited veterinarians into whose hands they fell to make inquiry as to causes.

Soluble iodin (Miller's) is iodin with potassium iodid coefficient 1. It is a remedy that is used internally, externally, hypodermically and intravenously, and is otherwise known as Iodum-Miller.

Roy Cross, Secretary of the Kansas City Testing Laboratory, has this to say of Iodum-Miller, following his

Test W-871: "This preparation has 19 times the germicidal power of carbolic acid. This value is based upon the germicidal action on typhoid bacillus. This test shows available iodin as found in Iodum-Miller to have the greatest bactericidal power of any substance that we have ever tested that can be used medicinally."

See page 660. I. N. MILLER.

DEATH OF HORSES FOLLOWING DRENCHING WITH OIL

On June 6th, I was called to see a fine pair of mares weighing 1,600 lbs. each. The owner said that both of the horses were very sick and to come as quickly as possible. I made the trip, a distance of eight miles, as fast as I could, and on my arrival, found that they really were very sick. The owner, believing that the mares were infested with intestinal worms, bought a gallon of raw linseed oil, and gave one quart of the oil to which he added one ounce of turpentine, to each animal. This was done about two hours before I was called.

Both of the animals were in almost a comatose condition; their heads were near the floor, respiration rapid, pulse 60, temperature 103° F. and there was muscular trembling. The respiration sounds appeared to be normal, but there were no audible peristaltic sounds. One of the mares lived three days and the other ten. They remained in the same comatose condition, gradually growing weaker until they died. Bowel action was not stimulated in the mare that died at the end of three days in spite of all the cathartics I used. In the one that lived ten days, the bowels moved somewhat during the last four days Upon autopsy all I found that was abnormal was moist gangrene of the lungs.

The owner of these mares is a good horseman. He had three horses and three cows, all of which were eating of the same kind of hay. The three horses stood side by side and were fed alike, but the one that survived was not given any of the oil; and the cows which were not given of the oil were not affected in any way.

I have a sample of the oil that had been given analyzed, and it contained forty-one per cent linseed oil and fifty-nine per cent mineral oil. Did these horses die from mechanical pneumonia or systemic poisoning, or both? I should be very glad to hear from anyone having experience with adulterated oil

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NEWS ITEMS

Dr. G. C. Furnish, of Hiawatha, Kans., died suddenly while a guest at the St. Charles hotel, St. Joseph, Mo., July 20th.

The third annual meeting of the Southern Tier Veterinary Medical Association was held at Elmira, N. Y., July 7th. A clinic was held at the hospital of Dr. A. J. Battin. Among those taking part in the business and literary program were Drs. C. D. Pearce, of Binghamton, C. P. Fitch of Ithaca, W. E. Muldoon of Ithaca, J. M. Burt of Waverly, D. H. Udall of Ithaca, G. W. Wheeler of Deposit, A. J. Battin of Elmira, P. A. Fish of Ithaca, P. J. Axtell of Binghamton, J. G. Wills of Albany, W. L. Williams of Ithaca.

The Minnesota legislature has abolished the state biological laboratory and the distribution of anti-hog-cholera serum and virus to residents of the state has been discontinued.

The Kansas City Veterinary College has added three eminent instructors to its teaching staff, namely: Dr. Louis A. Merillat, of Chicago, a well known instructor in operative and clinical surgery; Dr. W. L. Williams, of Cornell University, who will give a special course on the causes, prevention and treatment of sterility; Major Daniel LeMay, who will give to the subject of military practice a much wider scope than heretofore from a knowledge based on long years of experience.

The addition of these well known teachers to what has heretofore been considered a very strong faculty, will certainly give to the students of this college unsurpassed opportunity to acquire a very thorough preparation for the life work of a veterinarian.

Dr. F. L. Gallagher, of the Bureau of Animal Industry, is in Montana to coöperate with cattle growers in the control of tuberculosis and the establishment of accredited herds.

Farmers of southeastern Washington are said to have lost live-stock valued at more than $65,000 because of rabies.

Dr. McCloud, of Stanwood,Iowa, suffered a broken ankle when he was kicked by a cow, July 10th.

Dr. Asa Brown has changed his location from Frederick to Hobart, Okla.

Dr. J. H. McNeil, of Philadelphia, was appointed chief of the New Jersey bureau of animal industry at a salary of $4,000 a year, July 19th. Dr. McNeil graduated from the University of Pennsylvania in 1898, served as government inspector for some time, and for eight years was dean of the veterinary department of the Iowa State College. Later he became professor of veterinary surgery at the Ohio State University, and in 1912 he went to Brazil, where he supervised the raising of cattle for a large packing establishment.

It is reported that an investigation by bacteriologists of the Louisiana state board of health has revealed virulent and deadly anthrax bacilli in all the cheaper grade of hair brushes purchased in New Orleans. A shaving brush bought in that city is said to have been responsible for the death from anthrax of a man in Pass Christian, Miss.

Dr. C. P. Fitch, of Ithaca, N. Y., has been appointed professor of comparative pathology and bacteriology in the college of agriculture of the University of Minnesota. He will also be chairman of the division of veterinary medicine.

Dr. A. P. McKee, of Macomb, Ill., after an illness of several months, has recovered sufficiently to resume his practice again.

Dr. Chas. Keane, state veterinarian, reported on July 24th that a large number of hogs and cattle have died in Modoc county, California, due to the placing of poisoned salt on the ranges.

Dr. H. R. McNally, government veterinarian, has been transferred from Springfield, Mo., to Kansas City, where he will have charge of the inspection of serum manufacture.

Drs. Edmunds and Golding, of San Francisco, arrived at Honolulu, Hawaii, July 3rd, to assist in fighting anthrax in the islands.

Dr. L. E. Northrup, state veterinarian of Indiana, reported on July 25th, that twenty cattle had been poisoned near Alexandria, Ind., through some chemical apparently deliberately sprinkled on the pasture by unknown parties.

Dr. W. Horace Hoskins, dean of the New York State Veterinary College, has urged the army veterinary service at Washington to conscript such horses as are needed for the army.

Dr. C. C. Logan has moved from Keosauqua, Ia., to a stock ranch near Cantril, Ia., where he has a position as veterinarian and foreman.

Dr. W. P. Divelbiss, B. A. I. inspector at St. Joseph, Mo., has been selected to assist in

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hog cholera control work conducted by the government in Missouri. His headquarters will be in Sedalia.

The semi-annual meeting of the Genesee Valley Veterinary Association was held at Albion, N. Y., July 25th. Papers were read by Drs. J. L. Wilder of Akron, Dodd of Canandaigua, McClelland of Buffalo and Cleaver of Avon. Several operations were demonstrated at the clinic.

The veterinary hospital of Dr. W. A. Harris, Tuscaloosa, Ala., was destroyed by fire, July 30th.

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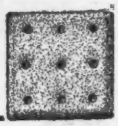

Nearly 1,000 sheep died near Warland, Mont., recently from plant poisoning. It is believed that death camas was the cause. The owner of the sheep met with more hard luck at about the same time. He had brought in five saddle horses for his herders and they were led along the railroad track when a train struck and killed all of them.

The San Joaquin Valley Veterinary Medical Association was organized at Fresno, Cal., July 11th. It will be an auxiliary to the state association, and hold meetings on the evening of every second Wednesday of each month. The territory involved contains about fifty veterinarians. The officers elected were, Dr John J. McKenna, of Fresno, president; Dr. L. A. Danielson, of Madera, vice-president; and Dr. Jos. M. Arburua, of Hanford, secretary and treasurer.

Dr. Joseph Hughes, of Chicago while en route to the meeting of the Illinois association at National Stock Yards, Ill., July 18th, met with a painful accident when the train he was on had a head-on collision in the railroad yards at Peoria. Dr. Hughes suffered a heavy contusion of the right thorax and was confined to his bed for a week.

A temporary injunction was granted to local dairymen against the city of Aberdeen, S. D.,

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restraining the municipality from enforcing the tuberculin testing ordinance, July 31st.

At the opening of the July term of the circuit court in Faulkner county, Arkansas, 307 indictments were returned against farmers who had failed or refused to comply with the tick eradication law.

A mule owned by S. H. Edwards, of Carruthersville, Mo., recently gave birth to a colt, the sire being a saddle horse. The offspring is said to look much like a horse colt except that its ears are longer.

Dr. A. S. Cooley resigned his position as state veterinarian of Ohio July 31st, and the governor appointed Dr. T. A. Burnett as his successor. Dr. Burnett has been with the state board of agriculture as veterinarian for four years.

Dr. C. M. Gardiner, state veterinarian of Oregon, has reported tuberculosis to be prevalent among cattle in Coos county. A test of 630 cows showed 60, or about 10 per cent, reactors.

Dr. W. E. Phelps was appointed city meat and dairy inspector of Redlands, Cal., July 18th.

A pamphlet on first aid hints in the care of horses written by an army veterinarian, is being distributed among the United States mounted troops by the American Red Star Animal Relief.

Dr. John R. Aufente has been appointed meat inspector in the quartermaster's department of the army at Brownsville, Texas, and Dr. Oliver H. Leonhart has received a similar appointment at Douglas, Ariz.

Owing to the appearance of anthrax among cattle in Kane county, Ill., Health Commissioner Robertson of Chicago instructed milk consumers in the city to boil all milk purchased. Chicago receives much of its milk from that section.

Surgeon General Gorgas in the reorganization of the army veterinary corps has selected the following veterinarians as an advisory board: Dr. C. J. Marshall, state veterinarian of Pennsylvania; Dr. David S. White, dean of the College of Veterinary Medicine, Ohio State University; Dr. Louis A. Klein, dean of the School of Veterinary Medicine, University of Pennsylvania; Dr. V. A. Moore, dean of the New York State Veterinary College, Cornell University, and Dr. John R. Mohler, Assistant Chief of the Bureau of Animal Industry.

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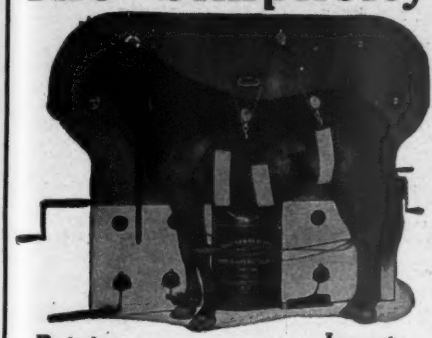

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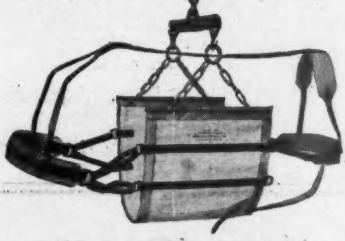

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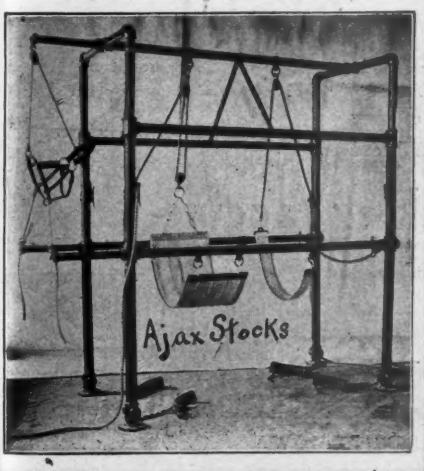

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ASSOCIATION MEETINGS

The information given below is up-to-date and has been furnished by the secretaries of the various associations listed. Secretaries are requested to supply us data regarding their associations after each meeting; otherwise, the association will necessarily be dropped from the list. We ask secretaries to kindly co-operate with us in keeping before the members of their associations the date and place of the next meeting.

Name of Association	Date of Meeting	Place of Meeting	Secretary
Alabama Vet. Med. Assn.			C. A. Cary, Auburn, Ala.
Alumni Assn., Col. of Vet. Med., O. S. U.		Columbus, O.	W. R. Hobbs, O. S. U., Columbus, O.
Alumni Assn., N. Y. State Vet. College		New York	P. K. Nichols, Port Richmond, N. Y.
Alumni Assn., U. S. Col. Vet. Surg.	April 1918	Washington, D. C.	Chas. M. Mansfield, 1344 Newton St., Washington, D. C.
American Vet. Med. Assn.	Aug. 20-24, 1917	Kansas City, Mo.	L. A. Merillat, 1827 Wabash, Chicago.
Arkansas Vet. Med. Assn.	Jan. 1918	Little Rock, Ark.	R. M. Gow, Little Rock.
British Columbia Vet. Assn.	Sept. 21, 22, 1917	Penticton, B. C.	Kenneth Chester, New Westminster, B. C.
B. A. I. Vet. Assn. of So. Omaha	4 times a year	So. Omaha, Neb.	J. W. Giffen, c/o B. A. I., So. Omaha
California State Vet. Med. Assn.	Sept. 12	Hanford, Cal.	F. M. Hayes, Davis, Cal.
Central Canada Vet. Assn.	3rd week Jan. 1918	Ottawa, Ont.	A. B. Wickware, Experimental Farm Ottawa.
Central N. Y. Vet. Med. Assn.	Last week in June and Nov.	Syracuse, N. Y.	W. B. Switzer, Oswego, N. Y.
Chicago Vet. Society	2nd Tues. of month	Chicago, Ill.	A. A. Leibold, 4421 N. Lincoln St., Chicago.
Colorado Vet. Med. Assn.	January, 1918	Ft. Collins, Colo.	I. E. Newsom, Ft. Collins, Colo.
Conestoga Veterinary Club	2nd Thurs. of month	Lancaster, Pa.	H. W. Barnard, 529 E. King St., Lancaster, Pa.
Connecticut Vet. Med. Assn.	Aug. 8	Bristol, Conn.	A. T. Gilyard, Waterbury, Conn.
Eastern Iowa Vet. Med. Assn.	Dec. 13	Muscatine, Ia.	Jno. Tillie, Muscatine, Ia.
Genesee County Vet. Med. Assn.			W. J. Houden, Flint, Mich.
Genesee Valley Vet. Med. Assn.	July	Rochester, N. Y.	I. H. Taylor, Henrietta, N. Y.
Georgia State Vet. Assn.	Sept. 18, 19, 1917	Columbus, Ga.	Peter F. Bahnsen, Capitol Bldg., Atlanta.
Hudson Co. Vet. Practitioners' Club	Monthly	Jersey City, N. J.	B. D. Blair, 782 Montgomery St., Jersey City, N. J.
Hudson Valley Vet. Med. Society	Nov. 7	Millbrook, N. Y.	Wm. Henry Kelly, Albany, N. Y
Idaho Assn. of Vet. Graduates		Boise, Idaho	C. V. Williams, Blackfoot, Idaho.
Idaho Vet. Med. Assn.	Sept. 19, 20	Nampa, Idaho	O. C. Engebretson, Burley, Idaho.
Illinois State Vet. Med. Assn.		East St. Louis, Ill.	L. A. Merillat, 1827 Wabash Ave., Chicago
Illmo Vet. Med. Assn.		Collinsville, Ill.	L. B. McKinley, Freeburg, Ill.
Indiana Vet. Med. Assn.	Jan. 1918	Indianapolis, Ind.	Geo. H. Roberts, Indianapolis, Ind.
Iowa Vet. Med. Assn.		Ames, Iowa	H. B. Treman, Rockwell City, Ia.
Kansas Vet. Med. Assn.	Jan. 2, 3, 1918	Manhattan, Kan.	J. H. Burt, Manhattan, Kan.
Kentucky Vet. Med. Assn.	Sept. 13, 14, 1917	Louisville, Ky.	D. E. Westmorland, Owensboro, Ky.
Keystone Vet. Med. Assn.	2nd Tuesday of month	Philadelphia	L. B. Davis, 857 E. Girard, Philadelphia.
Lake Erie Vet. Med. Assn.	1st Tuesday in Dec.	Norwalk, O.	N. D. Backus, Elyria, O.
Los Angeles Vet. Med. Assn.	3rd Wed. of month	Los Angeles	J. A. Dell, 16th & Pacific, Los Angeles.
Maine Vet. Med. Assn.		Bangor, Me.	M. E. Maddocks, Augusta, Me.
Manitoba Vet. Assn.		Winnipeg, Man.	W. Hilton, 275 James St., Winnipeg.
Massachusetts Vet. Assn.	4th Wed. each month	Worcester in Sept.; Boston rest of year	E. A. Cahill, Boston, Mass.
Michigan State Vet. Med. Assn.	1st Tues. & Wed. after 1st Mon. in February	Lansing, Mich.	W. Austin Ewalt, Mt. Clemens, Mich.
Minnesota State V. M. Assn.	Jan. 9, 10, 11, 1918	Minneapolis, Minn.	G. Ed. Leech, Winona, Minn.
Mississippi State Vet. Med. Assn.	January 8-9, 1918	Meridian, Miss.	E. S. Norton, Greenville, Miss.
Mississippi Valley Vet. Med. Assn.	July 6, 1917	Galesburg, Ill.	W. Lester Hollister, Avon, Ill.
Missouri Valley Vet. Assn.		St. Joseph, Mo.	R. F. Bourne, 1336 E. 15th, Kansas City.
Missouri Vet. Med. Assn.	Last week in July	Neosho, Mo.	C. D. Folse, 1336 E. 15th St., Kansas City
Montana Vet. Med. Assn.	Sept. 26-27, 1917	Helena, Mont.	A. D. Knowles, Missoula, Mont.
Montgomery Co. Vet. Med. Assn.	Last Fri. each month	Crawfordsville, Ind.	A. B. Niven, Crawfordsville, Ind.

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Name of Association	Date of Meeting	Place of Meeting	Secretary
Nat'l Assn. B. A. I. Employees	2nd Mon. in Aug., 1917.	Omaha, Neb.	S. J. Walkley, 185 N. W. Ave., Milwaukee
Nebraska Vet. Med. Assn.	2nd Tues. & Wed. in Dec.	Lincoln, Neb.	S. W. Alford, Lincoln, Neb.
New York State Vet. Med. Society	July 25, 26, 27	Brooklyn, N. Y.	C. P. Fitch, Ithaca, N. Y.
North Carolina Vet. Med. Assn.		Charlotte, N. C.	J. P. Spoon, Burlington, N. C.
North Dakota Vet. Assn.	July, 1917.	Fargo, N. D.	W. J. Mulroony, Havana, N. D.
Northeastern Indiana Vet. Assn.	Oct. 9, 1917.	Ft. Wayne, Ind.	R. M. Boyd, Avilla, Ind.
Northwestern Ohio Vet. Med. Assn.	Feb. 21.	Toledo, O.	Paul E. Wood, Ottawa, Ohio.
Ohio State Vet. Med. Assn.	Jan. 10, 11, 1918.	O. S. U. Columbus, O.	F. A. Lambert, care O. S. U., Columbus
Ohio Valley Vet. Med. Assn.	July	Oakland City, Ind.	C. S. Henry, Terre Haute, Ind.
Oklahoma State Vet. Med. Assn.	May 3, 4	Oklahoma City	R. C. Smith, Enid, Okla.
Ontario Vet. Assn.		Toronto, Canada	H. E. Hurd, 397 Queen St., W., Toronto, Ont.
Oregon Vet. Med. Society		Probably Salem, Ore.	B. T. Simms, Corvallis, Ore.
Pennsylvania State Vet. Med. Assn.		Harrisburg, Pa.	E. H. Yunker, 2344 N. 18th, Philadelphia.
Rhode Island Vet. Med. Assn.	2nd Tues. Jan.		U. S. Richards, Woonsocket, R. I.
San Joaquin Valley Vet. Med. Assn.	2nd Wed. of month.	Fresno, Cal.	Jos. M. Arburua, Hanford, Cal.
Schuylkill Valley Vet. Med. Assn.		Reading, Pa.	C. R. Potteiger, Reading, Pa.
South Dakota Vet. Med. Assn.	Jan. 15, 16, 1918.	Sioux Falls, S. D.	S. W. Allen, Watertown, S. D.
Southeastern States Vet. Med. Assn.	Dec. 27, 28, 29, 1917.	Chattanooga, Tenn.	G. A. Roberts, West Raleigh, N. C.
Southern Aux. Cal. State Vet. Med. Assn.	Sept. 19, 1917.	Los Angeles, Cal.	J. A. Dell, 16th & Pacific, Los Angeles.
S. W. Michigan Vet. Med. Assn.	Aug. 31.	Indian Lake, Mich.	L. A. Minter, Niles, Mich.
Tenn. Vet. Med. Assn.	Nov. 7, 8, 1917.	Columbia, Tenn.	F. R. Youree, Lebanon, Tenn.
Texas Vet. Med. Assn.		Ft. Worth, Tex.	E. M. Wiggs, Greenville, Texas.
Tri-County Vet. Med. Assn.	March 14.	Liberty, Ind.	Geo. G. Ferling, Richmond, Ind.
Twin City Vet Med. Society	Once a month.	St. Paul.	C. C. Palmer, St. Paul, Minn.
U. S. Live Stock Sanitary Assn.		Chicago	H. S. Ward, St. Paul, Minn.
Utah Vet. Med. Assn.		Logan, Utah	E. P. Coburn, Brighton City, Utah.
Veterinary Assn. of Saskatchewan.	Aug. 15, 16, 17, 1918.	Regina, Sask.	R. G. Chasmar, Hanley, Sask.
Vet. Med. Assn. of New Jersey		Asbury Park, N. J.	E. L. Loblein, New Brunswick, N. J.
Vet. Med. Assn. of N. Y. City	1st Wed. ea. mo. except July, Aug., Sept.	New York City	R. S. MacKellar, 351 W. 11th St., N. Y.
Vet. Med. Assn. of Geo. Washington Univ.	1st Sat. each month.	Washington, D. C.	C. W. Rippon, 2115 14th St., N. W., Washington, D. C.
Vet. Med. Society Wash. State College	1st and 2nd Tues. ea. mo.	Pullman, Wash.	Claude Holden.
Virginia State Vet. Med. Assn.		Norfolk, Va.	W. G. Chrisman, Blacksburg, Va.
Washington State Vet. Med. Assn.	June, 1918.	Portland, Ore.	Carl Cozier, Bellingham, Wash.
West Virginia Vet. Med. Assn.		Parkersburg, W. Va.	E. Layne, Huntington, W. Va.
Western Michigan Vet. Med. Assn.		Allegan, Mich.	T. S. McGuire, Grand Rapids, Mich.
Western N. Y. Vet. Med. Assn.	4th week, June, 1917.	Buffalo, N. Y.	F. F. Fehr, 36 Prospect Ave., Buffalo.
Wisconsin Vet. Med. Assn.	Jan. 18, 19, 20, 1918.	Madison, Wis.	W. A. Wolcott, Madison, Wis.
York Co. Vet. Med. Society	1st Tues. after 1st. Mon. of each month.	York, Pa.	E. S. Baustieker, 325 Newberry, York, Pa

Hog cholera was reported as prevailing at a number of places during July. Several deaths from the disease occurred near Thompsonville, Conn., Sherman, Texas, Steele county Minnesota and Texas county, Mo. Dr. A. T. Peters state veterinarian of Illinois, sent out a warning to swine raisers to be on their guard against the appearance of the malady. The malicious poisoning of hogs was said to have occurred on several farms in McDonough county, Illinois, and farmers in that vicinity were guarding their hog pens with shot guns.

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BLACKLEG FILTRATE

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Germ Free Concentrated

A New Effective Protection Against Blackleg

There is no disease of animals known in which prevention with biologics has been more widely applied than in blackleg. The good results which followed the introduction of protective inoculation are now being recognized throughout the United States and it may be safely stated that in blackleg districts a considerable proportion of animals are now being vaccinated annually. The available statistical data proves the remarkable reduction of losses from this disease, as a result of systematic vaccination.

The vaccine prepared in pellet or powder form is the outcome of early investigations on blackleg immunization by Arloing, Corvin, and Thomas, to whom the honor belongs of developing the method of immunization known as the "Lyon Method." The principle of this immunization consists in the attenuation of dried juices from blackleg lesions of an animal which has succumbed to the disease.

Kitt, in 1898, published the results of his experiments whereby he succeeded in simplifying the "Lyon Method"; his process requiring only a single injection, and he further recommended that it be made in the shoulder region where the skin is loose and easily pierced by the needle.

It must be accepted, however, that blackleg vaccine prepared in the usual pellet or powder form from attenuated blackleg meat is a comparatively crude product. Blackleg vaccine as marketed at the present time cannot be accurately standardized and a single dose may contain 100,000 or 1,000,000 spores and at other times a much smaller number. Such a variation would naturally result in irregularities of the immunizing action of the vaccine and it is no doubt due to this fact that direct losses from vaccination and deaths from the natural infection after vaccination cannot be entirely avoided. Nevertheless, blackleg vaccination as now practised has given splendid results, though complaints against the reliability of the method are now infrequent, both from veterinarian and stockman.

Realizing the shortcomings of the vaccine, investigators have been at work to develop a more uniform product which would avoid losses from vaccination and at the same time confer to the animals an effective protection against blackleg.

Attention was first directed toward developing a vaccine consisting of the attenuated cultures of the blackleg organism. Leclainche and Vallee developed a **liquid blackleg serum** which they tested out very extensively, and it is now being employed in different countries with fairly good results.

The shortcomings of the liquid blackleg vaccine must be recognized since it is subject to the same deficiencies as is the Pasteur vaccine for anthrax; viz., a careful standardization of the product is almost impossible; the keeping qualities of such a vaccine are limited; and furthermore, it is a recognized fact that the blackleg organism does not retain a uniform virulence upon artificial cultivation. These factors, no doubt, are responsible for the fact that the liquid blackleg vaccine is not attaining popularity for vaccination against blackleg.

With the advent of the development of the different immune sera for the prevention and treatment of diseases the utilization of animals for the production of **blackleg immune serum** has also been undertaken.

It is natural that the use of the serum for the control of blackleg has its limitations. The injection of an animal with serum induces a passive immunity which protects the animal for a period of less than one month.

BLACKLEG FILTRATE—LEDERLE

More recently in this country, **germ-free extracts (agressins)** have been highly recommended for immunization against blackleg, and the results from vaccination with this product are highly satisfactory and no doubt more reliable and uniform than with the blackleg pellets or with the powder. However, the cost of production of such extracts is considerable and therefore the stock owner, especially since he is accustomed to expend only a nominal sum for the products used heretofore for vaccination against blackleg, would not readily take advantage of this product.

Researches With Blackleg Filtrate—Lederle

Japanese investigators have recognized the value of immunization against blackleg with blackleg filtrate and developed the procedure to such a state of perfection that it is now almost uniformly employed in Japan.

Realizing the advantages which would follow the development of a potent blackleg filtrate, investigations were undertaken in our laboratories along the line of the Japanese method, especially since it appeared evident that a blackleg filtrate could be developed which, in its immunizing action would possess the same effectiveness as that obtained from the germ-free extract, juices of meat taken from animals affected by blackleg.

It would be impossible to describe in this short article, in detail, the method of procedure which we followed in the development of Blackleg Filtrate-Lederle, especially since a detailed description of the experimental work has been published in articles on Blackleg Filtrate-Lederle in the June issues of both the Journal of the American Veterinary Medical Association and The American Journal of Veterinary Medicine.

The tests undertaken with the filtrate proved that calves vaccinated with the product and subsequently injected with highly virulent material failed to develop the disease, whereas the control animals which were not given the filtrate, but were injected with the same amount of virulent material as the immunized animals, died of blackleg.

The dose of the filtrate as first prepared was 5cc. Since, however, it appeared advantageous to reduce this to a quantity which could be more conveniently handled, studies were made toward refining and concentrating the product. This has been successfully accomplished and in its present form a dose of 1 cc. possesses the desired immunizing properties; and besides, it is preserved in such a manner that its keeping qualities are assured for an almost indefinite period of time.

One of the great advantages of Blackleg Filtrate-Lederle is that it does not contain the blackleg germ in any form **and therefore cannot induce the disease under any circumstances.** At the same time, it possesses all of the immunity producing properties of the vaccine and Blackleg Extracts (Agressins). **Consequently, the Blackleg Filtrate-Lederle represents a safe and effective product for vaccination against blackleg.**

Standardization

Blackleg Filtrate is accurately standardized both on cattle and guinea-pigs. Furthermore, since it represents a laboratory product the uniformity of its potency can be accurately controlled.

The Duration of Immunity

With reference to the duration of immunity produced by Blackleg Filtrate-Lederle, investigations have proved that this lasts for at least one year; that is, the same length of time as the immunity produced by the use of vaccine or germ-free extracts.

BLACKLEG FILTRATE—LEDERLE

There is no conclusive information available whereby a permanent immunity may be produced by the use of any blackleg product.

Since claims are made that certain products produce a permanent immunity, and in view of the fact that all the available scientific information on this subject indicates that up to date no product has been developed which would confer to the animals a permanent immunity, we appealed to the United States Bureau of Animal Industry for their views on this particular matter. In a letter dated June 26, 1917, the attitude of the Bureau of Animal Industry with regard to the duration of Immunity from different blackleg products, was expressed as follows:

> "Referring to your letter of the 7th instant, concerning the duration of the period of immunity conferred by the use of blackleg germ-free extract (Agressins) as compared with the immunity following the use of blackleg filtrate, you are advised that we are not in a position to say that the immunity conferred by the use of either of these products is permanent. It is probable that this immunity may last a comparatively long period, but we agree with your statement that there has not been sufficient time as yet to say with accuracy that a permanent immunity is conferred, and had advised certain manufacturers of blackleg Agressin accordingly, prior to receipt of your letter."

Method of Administration and Dosage

Blackleg Filtrate-Lederle is administered subcutaneously and preferably in the neck, midway between the head and shoulder, using an ordinary hypodermic syringe which has previously been sterilized. At the point of injection the skin should be thoroughly cleansed with a suitable antiseptic solution.

Blackleg Filtrate-Lederle—is marketed in a concentrated form of which 1 cc. doses will afford sufficient immunity to the cattle to protect against the natural infection for a period of about a year—that is, for the same length of time as the immunity established by vaccine or by germ-free extract.

Animals To Be Vaccinated

Calves as a rule should not be vaccinated until they are six months old. Animals over two years old are seldom affected, and the mortality among them is so small as to make vaccination unprofitable. Calves between six months and two years of age should be subjected to the vaccination.

Time To Vaccinate

The time for vaccinating depends largely upon circumstances. In the different parts of the country there is a distinct blackleg season, and the proper time for vaccination is just before the arrival of this season. The disease, however, is mostly prevalent during the spring and fall months.

BLACKLEG FILTRATE—LEDERLE

Packages

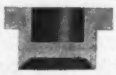

Fig. No. 1

Fig. No. 2

Fig. No. 3

BLACKLEG FILTRATE-Lederle is supplied in the special Lederle vial designed in our Laboratories with the object of giving the maximum of protection to the product as well as rendering its use convenient for the veterinarian. A brief description will demonstrate the advantages of this vial:

Figure No. 1 shows a cross section of the stopper employed in this package. It will be noted that a diaphragm of rubber, easily pierced by a hypodermic needle, completes the seal.

Figure No. 2 shows the vial with the stopper in place, the vial having been filled and stoppered under aseptic conditions in the laboratory. The stopper is securely sealed to the vial and is not to be removed.

Figure No. 3 shows the vial in the hands of the operator and demonstrates the manner in which the filtrate is removed from the vial. After moistening the top of the rubber stopper with an antiseptic solution, the operator partly withdraws the piston of his syringe, then inserts the needle through the diaphragm in the stopper. He then forces the air in the syringe into the vial and upturning the vial as in Figure 3, the filtrate will flow into his syringe. When the required amount has been removed from the vial, the needle is withdrawn and the opening made by the needle will close, effectively sealing the vial. This operation may be repeated as often as desired.

BLACKLEG FILTRATE-Lederle is supplied in three different size packages as follows:

Package containing 10 c.c. (10 doses)	$ 2.00
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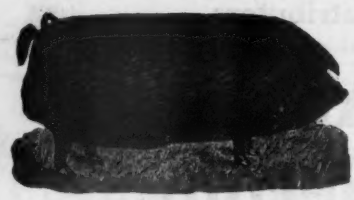

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